MEDIATING EFFECT OF WORK ENVIRONMENT ON THE RELATIONSHIP BETWEEN SAFETY MANAGEMENT PRACTICES AND SAFETY PERFORMANCE AMONG NURSES OF PUBLIC HOSPITALS IN JORDAN

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By

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ABSTRACT

Based on the Social Exchange Theory, this study examined the role of the work environment in mediating the relationship between safety management practices on the self-reported safety performance of nurses (safety compliance, safety participation and risky behaviour). A total of 517 nurses from eight hospitals belonging to the Jordanian Ministry of Health in Irbid participated in the study. Partial Least Squares (PLS) and the Structural Equation Modelling techniques were used to test the hypotheses. The results found that safety management practices directly impact safety compliance, safety participation, and risky behaviour.

Furthermore, work environment was found to be a mediating factor in the relationship between safety management practices, safety compliance and safety participation. However, work environment did not have a mediating effect on the relationship between safety management practices and risky behaviour among the respondents. Thus, from the findings of the study, it can be concluded that the hospital management should focus on implementing safety management practices and consider the work environment of nurses when making decisions on how to improve their safety performance. Finally, the theoretical and practical implications of the study are discussed.

Keywords: safety management practices, safety performance, work environment, Jordanian Ministry of Health, nurses

ABSTRAK

Berasaskan Teori Pertukaran Sosial, kajian ini mengkaji peranan persekitaran pekerjaan dalam mengantarakan hubungan antara amalan pengurusan keselamatan terhadap tahap prestasi pelaporan kendiri keselamatan oleh para jururawat (pematuhan keselamatan, penyertaan keselamatan dan tingkah laku berisiko). Seramai 517 orang jururawat daripada lapan buah hospital milik Kementerian Kesihatan Jordan di Irbid telah mengambil bahagian dalam kajian ini. Kaedah Kuasa Dua Terkecil Separa *(Partial Least Squares (PLS)* dan Pemodelan Persamaan Berstruktur *(Structural Equation Modeling)* telah digunakan untuk menguji hipotesis kajian ini. Hasil kajian mendapati bahawa amalan pengurusan keselamatan telah memberi kesan langsung terhadap pematuhan keselamatan, penyertaan keselamatan dan tingkah laku berisiko. Selain itu, persekitaran pekerjaan juga telah dibuktikan menjadi faktor pengantara dalam hubungan antara amalan pengurusan keselamatan, pematuhan keselamatan penyertaan keselamatan. Walau bagaimanapun, persekitaran kerja pula didapati tidak mempunyai hubungan pengantara ke atas hubungan antara amalan pengurusan keselamatan dan tingkah laku berisiko dalam kalangan responden. Oleh itu, berdasarkan dapatan kajian ini, dapatlah disimpulkan bahawa pengurusan hospital perlu memberi fokus kepada pelaksanaan amalan pengurusan keselamatan dan mempertimbangkan persekitaran kerja jururawat apabila membuat keputusan mengenai cara untuk memperbaiki prestasi keselamatan jururawat. Akhir sekali, implikasi teori dan praktikal kajian turut dibincangkan.

Kata kunci: amalan pengurusan keselamatan, prestasi keselamatan, persekitaran pekerjaan, Kementerian Kesihatan Jordan, jururawat

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LIST OF ABBREVIATIONS

AVE	Average Variance Extracted
CA	Cronbach's Alpha
CF	Cooperation Facilitation
CMV	Common Method Variance
CR	Composite Reliability
CVI	Content Validity Index
D2	Mahalanobis
F^2	Effect Size
GDP	Gross Domestic Product
HCMs	Hierarchical Components Models
HCW	Healthcare Workers
HHC	High Health Council
HND	Higher National Diploma
HTMT	Heterotrait-Monotrait Ratio
I-CVI	Item Level Content Validity Index
ILO	International Labour Organisation
JMOH	Jordanian Ministry of Health
JUH	Jordan University Hospital
KAH	King Abdullah University Hospital
LOC	Lower-Order Component
M	Mean
MC	Management Commitment to Safety
MOH	Ministry of Health
OHSAS	Occupational Health and Safety Assessment Standard
OSH	Occupational Safety and Health
OYA	Othman Yeop Abdullah
PCBSI	Proactivity-and-Consequence-Based Safety Incentive

PhD	Doctor of Philosophy
PLS	Partial Least Squares
PLS-SEM	Partial least squares-Structural Equation Modelling
PSPE	Prospective Safety Performance Evaluation
PP	Safety Promotion Policy
Q^2	Predictive Relevance
R^2	R-squared Values
RB	Risky Behaviour
RMS	Royal Medical Services
SC	Safety Compliance
SCF	Safety Communication and Feedback
S-CVI	Scale Level Content Validity Index
SD	Standard Deviation
SEM	Structural Equation Modelling
SET	Social Exchange Theory
SMPS	Safety Management Practices
SP	Safety Participation
SPSS	Statistical Package for the Social Sciences
SRP	Safety Rule and Procedure
ST	Safety Training
UH	University Hospitals
UNRWA	United Nations Relief and Works Agency
UUM	Universiti Utara Malaysia
VIF	Variance Inflated Factor
WE	Work Environment
WI	Worker Involvement
β	Standardized Beta Values

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Workplace safety is essential to the continuous operation, optimal functionality, and survival of organisations (Kabir, Watson, & Somaratna, 2018; James & Zoller, 2017). Safety at workplaces and across various organisational structures remains critical to the overall performance and continued existence of organisations (Beus, Dhnanai, & McCord, 2015). Hence, industry practitioners, scholars and pertinent stakeholders have both acknowledged and underlined the requirement for improved safety performance indicators in work-related settings (Mullen, Kelloway, & Teed, 2017; Dababneh, Fouad, Jaleel, & Majeed, 2018; Cornelissen, Van Hoof, & De Jong, 2017).

The above positions notwithstanding, workers still face many risks arising from biological, ergonomic, psychological or chemical exposures (Hofmann, Burke, & Zohar, 2017; Balanay, Adesina, Kearney, & Richards, 2014). Consequently, various degrees of accidents, injuries, and fatalities, all of which account for multiple levels of challenges to organisations that are indicators of poor safety performance, are still noted in organisations (Erdogan, Ozyilmez, Beuar, & Emre, 2018).

Improvements in safety performance indicators are critical due to the effects that hazards can have on organisational performance indicators. The impacts could be present in the varied direct costs that accrue to organisations as a product of poor safety performance indicators.

These costs accumulate via medical and health bills, claims for deaths and permanent incapacitation, penalties, fines and damaged work equipment, and litigation expenses among others (Namian, Albert, Zuluaga, & Jaselskis, 2016; Battaglia, Frey, & Passetti, 2014; Kundu, Yadav, & Yadav, 2015).

In addition, the effects of lousy safety performance are also likely to increase indirect encumbrances in organisations. These encumbrances arise in the form of grief, expanded insurance costs, increased staff turnover, pain, production losses, and suffering (Hajmohammad & Vachon, 2014; Battaglia et al., 2014; Kundu et al., 2015).

Even though specific measures may have been taken to eliminate or limit these menaces, work-related incidences still happen. Thus, the necessity for improved safety in organisations and related work-setting cannot be over-emphasised to avoid the increasing magnitude of occurrences that poor safety performance has occasioned (Fernandez-Muniz, Montes-Peon, & Vazquez-Ordas, 2017; Hofmann et al., 2017).

According to the International Labour Organisation (ILO), current global data indicate an estimated annual of 2.78 million fatalities in workplaces due to human errors, poor management practices, safety systems, and structural inefficiencies. Other global estimates have also been noted. For instance, with regards to fatal occupation injuries, there were 380,500 deaths recorded (ILO, 2017). In 2015 alone, there were 2.40 million deaths due to fatal work-related illnesses. In summary, it is estimated that 7,500 people die every day. Of this total, 1,000 deaths were from occupational injuries, and 6,500 deaths were from work-related illnesses (Hämäläinen, Takala, & Saarela, 2017). More than 374 million persons have been estimated to be involved in non-fatal occupational injuries (ILO, 2017; Hämäläinen et al., 2017).

These global statistics indicate that the economic costs of workplace accidents, injuries, and fatalities are quite distressing and call for concern in addressing the issues of safety in workplaces. As Takala et al. (2014) noted, the economic cost of safety varies between 1.8% and 6.0% of the Gross Domestic Product (GDP) of various countries.

In the Middle East and Jordan, workplace accidents are of concern to researchers and industry practitioners alike (Eskandari et al., 2017) because mortality rates are thought to be higher than in other parts of the world (ILO, 2011). For example, in 2006, Hämäläinen calculated that fatal occupational rates per 100,000 were 20.0 in Middle East Crescent countries, as compared to 16.1 per 100,000 in established market economies like Europe and the United States, and 13.1 per 100,000 in former socialist countries. Oher Asian countries like Bangladesh, Pakistan, and Thailand at 23.1 per 100,000 and Sub-Sharan Africa at 21.0 per 100,000 were rated as worse (Hämäläinen, Takala, & Saarela, 2006).

In Jordan, precise figures are difficult to obtain as good databases and adequate means of collecting data are absent (Al-Wreidat, 2006; Dababneh et al., 2018; Al-Bsheish et al., 2019). From a study that mainly relied on social security figures, the occupational fatality rate of Jordan was estimated as 25 per 100.000 per year for the period from 1980 to 1993 (Rabbi, Jamous, Abudhaise, & Alwash, 1998). Other studies have found lower rates. The ILO estimated a fatality rate of 15.6 in Jordan for 2006, and the rate was estimated to be about 12.0 between 2008 and 2014 (Dababneh et al., 2018). In a study of hospital admissions from three major hospitals using data from 2008 to 2012, Al-Abdallat, Oqailan, Al Ali, Hudaid, and Salameh (2015) estimated a fatality rate of 2 per 100.000 workers. Also, they specifically noted the 1.1% fatality rate among Jordanian healthcare workers vis-à-vis other classes of workers. Considering this position in mathematical terms, the occupationally-induced fatalities rate among Jordanian health workers are high in relationship to the number of healthcare workers in Jordan.

In 2017, Mohammed Hussein, Chairman of the Organising Committee of First International Jordanian Forum for Occupational Health and Safety, said that “the international worker death rate has increased over the past seven years, and is likely to be higher in this region” (Al Eman, 2017). These inconsistent estimated rates demonstrate a crucial difficulty in examining the problem of workplace safety in Jordan, which is the absence of pertinent data for workplace injury reports, making studying the issue of workplace injuries and fatalities difficult. As Dababneh et al. (2018) noted, a “lack of a good and updated database and the absence of a clear and reliable mechanism for collecting, documenting and analysing data make the real size of work-related injuries and losses much more than what is published in our official reports” (p. 162).

The lack and inconsistency of data in the Jordanian context are present in all sectors of the Jordanian economy, including healthcare. To clarify the problem in the Jordanian healthcare context, the researcher conducted a preliminary examination of a small number of individuals from among the target population as Kanter, Tsai, Holman, and Koerner (2013) and Frohm, Lindström, Winroth, and Stahre (2006) suggested. This preliminary study was conducted from March to April of 2018 among 32 nurses using a survey. The findings suggest a not-too satisfactory level of safety performance. The respondents noted that safety was not accorded priority in their places of work. They said that though management the shows that they care about their employees, their commitment was not translated into requisite actions (see Table 1.1 below).

Characteristically, an analysis of the preliminary study indicated that injury rates among the workers were quite high, as noted in the frequency of accidents pointed out in the survey. The indicators used to arrive at his finding are attached in Appendix A.

Table 1. 1
Types of Injuries Reported from the Preliminary Study

		Frequency	**Percent**	**Percentage of total injuries reported**
Valid	NO	6	18.8	18.8
	Back pain	4	12.5	12.5
	Injury	8	25.0	25.0
	Infection	2	6.3	6.3
	Slipping	2	6.3	6.3
	Allergy Incidents	6	18.8	18.8
	Others	4	12.5	12.5
	Total	32	100.0	100.0

Globally, healthcare workers (palliative care, dental, surgical, nursing, laboratory, home-based, clinical, and non-clinical staff) are exposed to occupational hazards daily while carrying out routine tasks. Even though hospitals are set up to treat a wide range of illnesses and injuries, they are also a channel for transmitting diseases (Brotfain et al., 2017; Price et al., 2017; Al-Bsheish et al., 2019). The routes through which these healthcare workers sustain injuries occur while using injections, through inadequate waste management systems, during treatment of patients, and during general patient care and management. Indeed, doctors, physicians, and theatre nurses have reported injuries or contact with blood/body fluids while conducting serious or minor sessions (Martins, Coelho, Vieira, Matos, & Pinto, 2012).

Working conditions, occasioned by management practices of the management of hospitals where healthcare workers (HCWs) are attached, can affect their level of productivity and their proclivity to become infected with diseases (Adams, Zimmermann, Cipriano, Pappas, & Batcheller, 2018). Moreover, the level of the safety performance of HCWs is predicated upon safety management systems of the healthcare facility they to which they are attached (Picakciefe, Acar, Colak, & Kilic, 2017). Evidently, poor management practices in the healthcare setting have been identified as a critical factor affecting the performance of nurses in terms of safety (Subramaniam, Shamsudin, Mohd Zin, & Lazim, 2014). As such, conducting empirical examinations into organisational factors that can improve safety performance indicators among nurses has been suggested as necessary in this under-researched area (Lievens & Vlerick, 2014; Subramaniam et al., 2014).

With the above global position in mind, Jordanians, especially nurses, are part of the discussion about workplace safety. Most healthcare facilities have reported poor levels of commitment by the management of healthcare facilities for the safety of the nurses working in the facilities (McFadden, Stock, & Gowen, 2015).

In addition to directly related to safety issues, many workplace stressors are present in nursing work environments that can produce diseases and injuries. These stressors include factors associated with the immediate work context, characteristics of the organisation, and external changes that are happening throughout the healthcare industry. Nurses experience significant physical and psychological demands daily, as well as a work safety climate that could be unfavourable. The hazards of nursing work can damage their health both in the short and the long term. These adverse health outcomes include short-term issues such as musculoskeletal injuries/disorders, injuries, infections, and mental health issues, and, in the longer term, cardiovascular, metabolic, and neoplastic diseases (Bhatnagar, Gupta, Alonge, & George, 2017; Selamu, Thornicroft, Fekadu, & Hanlon, 2017).

Hence, the need to examine and understand factors that are capable of improving the safety performance indicators of the HCWs cannot be overemphasised (Yong, Ramendran, Yeoh, & Surienty, 2018). Although an enumeration of accidents is used to measure safety performance (Zhou, Fang, & Wang, 2008; Mousavi, Cudney, & Trucco, 2018), this process has been noted to be reactive. Moreover, notwithstanding that accidents are used to evaluate the level of safety in workplaces, the mere lack of accidents or reported accidents cannot be utilised to infer that safety is present (Mousavi et al., 2018; Beus, McCord, & Zohar, 2016 Al-Bsheish et al., 2019).

One issue is the underreporting of accidents. As Martins et al. (2012) noted, organisations often do not report accidents as they occur. Indeed, they posited that organisations underreport accidents by about 70%. In the healthcare setting, Santos and Reis (2016) noted a massive underreporting of accidents amongst nurses. A second issue is that accident reports should not be compared from one setting to another. For example, the accident level of healthcare employees should not be compared to those of construction workers because they are discrete occupations.

Thus, studying the factors that can improve safety performance indicators of healthcare workers remains essential. Characteristically, organisational factors have been attributed as being responsible for positively shaping employee safety-related behaviours (Huang et al., 2014; McFadden et al., 2015). While accidents are useful pointers of safety performance, Beus et al. (2016) noted that safety behaviours are more proactive and accurate measures of safety performance in organisations. Mistakes and wilful transgressions caused by non-participation and non-compliance with safety, and the propensity to take risks characteristically, lead to workplace accidents (Gibb, Lingard, Behm, & Cooke, 2014; Griffin, Young, & Stanton, 2015; Strauch, 2016). In the healthcare setting, complacency, lack of attention, heavy work schedules, and lack of management attention to the safety of HCWs are all noted to be the major causes of poor safety performance (Carayon, 2016; Lievens & Vlerick, 2014; Pousette, Larsman, Eklöf, & Törner, 2017).

With respect to such challenges, researchers and industry practitioners have paid much attention to identifying organisational factors that are capable of improving the safety performance levels of HCWs (Stock & McFadden, 2017) and, particularly pertinent with respect to this study, of those in Jordan (Al-Hamdan, Oweidat, Al-Faouri, & Codier, 2017). To this end, the present study intends to examine several safety management practices (SMPs) that have been identified across a myriad of socio-demographic settings vis-à-vis their ability to influence positive safety performance outcomes among HCWs. Because accidents do occur among HCWs, regardless of whether accurate data exist or not, studies aimed at improving the safety performance of HCWs and, by extension, reducing workplace accidents, are most welcome and highly encouraged.

1.2 PROBLEM STATEMENT

It has been theoretically and practically established that SMPs are directly and indirectly related to safety performance. This has been found in research done in numerous socio-demographic settings (Agbede, Manu, Agbede, & Mahamadu, 2016; Chen & Chen, 2014; Cheng, Ryan, & Kelly, 2012; Nordlöf, Wiitavaara, Högberg, & Westerling, 2017; Wachter & Yorio, 2014; Vinodkumar & Bhasi, 2010) and especially in the healthcare context (Guzman et al., 2015; Wand, Isobel, & Derrick, 2015).

It has also been established that several factors have either mediated and/or moderated the above relationships with the hope of better explaining such relationships. For example, these comprise safety knowledge and safety motivation (Vinodkumar & Bhasi, 2010), safety motivation (Chen & Chen, 2014), and leadership (Mullen et al., 2017; Sheehan, Donohue, Shea, Cooper, & De Cieri, 2016). On another note, while it is established that SMPs do significantly influence safety performance amongst workers of all kinds and sorts (Ashour & Hassan, 2019), there are still more requests to be done in terms of theory and practice and particularly in identifying the most critical factors that better explain this relationship (Vinodkumar & Bhasi, 2010; Subramaniam et al., 2014; Ashour & Hassan, 2019; Caparrós, Ferreira, Rojas, & Romero, 2020) especially in the healthcare setting (Lievens & Vlerick, 2014).

On a practical note, while much has been done in terms of activities and organisational programs aimed at reducing the number of workplace accidents, researchers and industry experts are still battling with the dilemma of the increasing number of accidents being recorded across various occupations (Bergh, Hinna, Leka, & Jain, 2014; Silvestre & Gimenes, 2017) and especially among HCWs (Dulon, Lisiak, Wendeler, &

Nienhaus, 2017; Kasatpibal et al., 2016; Markovic-Denic et al., 2015; Tao et al., 2016). The high levels of workplace accidents, injuries and deaths and the need to improve safety performance indicators in organisations and work-settings have further added to the growing concern among experts to identify factors that can curb this menace, especially in the healthcare setting.

In the healthcare setting, while studies have been conducted with specific attention to HCWs as a whole, little seems to have been done in terms of identifying factors that are capable of improving safety performance among nurses. More worrisome is that few steps have been taken to enhance the safety performance between nurses working in the Jordanian healthcare setting (Al-Ali, Al Faouri, & Al-Niarat, 2016; Al-Shiyab & Ababneh, 2018; Darawad, Al-Hussami, Saleh, Mustafa, & Odeh, 2015; Rayan, Qurneh, Elayyan, & Baker, 2016, Al-Bsheish et al., 2019).

Unfortunately, none of the above studies cited, though related to the healthcare setting, have captured the importance of organisational factors in improving safety performance. As of the writing of this dissertation, the researcher has been unable to identify a study in the Jordanian healthcare setting that explores how SMPs lead to enhancements in safety performance indicators through the work environment. Thus, this is plausibly the first study of its kind.

Characteristically, several factors have been identified as being capable of reducing workplace accidents. For example, these have included organisational climate/factors (Barbaranelli, Petitta, & Probst, 2015; Li, Jiang, Yao, & Li, 2013; Feng, Teo, Ling, & Low, 2014; Nawi, Ibrahim, Affandi, Rosli, & Basri, 2017), leadership (Mullen et al., 2017; Fernandez-Muñiz, Montes-Peón, & Vezquez-Ordes, 2014;), risk perception (Jahangiri, Zadeh, Bashar, & Zadeh, 2017), SMPs and worker engagement (Wachter & Yorio, 2014), fatigue (Fang, Jiang, Zhang, & Wang, 2015), and proactivity-and-consequence-based safety incentives (PCBSI) (Saracino et al., 2015). Specific factors in the healthcare setting have also been noted. For example, these include safety leadership (McCaughey, Halbesleben, Savage, Simons, & McGhan, 2014), transformational leadership and job characteristics (Lievens & Vlerick, 2014), and the human factors systems approach (Carayon et al., 2014). It is significant to note that the above factors are human-related in accident causation.

Clearly put, a huge disaster such as the Bhopal toxic gas leak has explained the significance of management practices and work climates as a contributory factor to system failures (Reason, 1990). In the investigation of the causal factors following and before the accident, Bowonder (1987) observed that SMPs within the company were poor; the three categories of human, technological, and system errors jointly occurred to activate the accident. Moreover, the results of a National Safety Council (NSC) report in 2011 exposed that human factors (unsafe actions) caused 88% of the accidents.

Equally, numerous investigations have shown that human behaviour is a critical factor for occupational accidents, causing between 80-85% of accidents (Rachael et al., 1996; Goetsch, 2011; Mufti, Ardyanto, Qomaruddin, & Fadilah, 2016). Moreover, human behavioural errors focusing on non-compliance with rules and regulations, non-participation in safety-related activities, and risk-taking patterns, were identified as the core causes of accidents at the workplace. (Bottani, Monica & Vignali, 2009).

Consequently, concern has been shifted to the role of SMPs and the working environment as determinants of workplace safety (Zhang, Li & Zuo, 2015). Hence the need to identify the significant human factors that will improve the safety performance behaviour of workers across various industries have become a priority. However, these have been grossly under-researched. Moreover, little attention has been paid to reduce the increasing number of accidents recorded among HCWs, especially among nurses and more especially among nurses in the Jordanian setting.

Therefore, the present study proposes to examine how SMPs can influence safety performance outcomes with the work environment as a mediator. It is expected that better SMPs would lead to improved perceptions of workers for the provision of a better workplace for them, which would, in turn, lead to better safety performance among the nurses. To the knowledge of the researcher, a paucity of research exists in this regard with a specific focus on the Jordanian setting.

Several SMPs have been identified as critical to improve safety performance (Chen & Chen, 2014; Kim & Kang, 2015), for example, the safety of management commitment, safety feedback and communication, and safety training. However, the present study incorporates an SMP that has been identified as essential yet has gained little empirical prominence. This SMP, as Wachter and Yorio (2014) identified, is cooperation facilitation. Unfortunately, this SMP has not been examined among HCWs, especially those in the Jordanian healthcare setting.

Additionally, while the SMPs that Wachter and Yorio (2014) identified are valuable to determine improved safety performance, more remains to be done in terms of further validating this submission in a much more regulated working environment such as the healthcare setting, and especially amongst nurses. Also, a further review of the safety management literature shows that no agreement exists as to how SMPs unidimensionally influences safety performance (mainly behaviours) through the work environment. However, to the knowledge of the researcher, there is a paucity of research in terms of theoretical development and research explicitly exploring the fundamental mechanisms of how different SMPs affect safety performance differentially via any known empirical route or mechanism that is primarily based on the factors being examined in this study.

Cooperation facilitation, in addition to management commitment to safety, safety communication and feedback, and safety training, among others, is a critical SMP that needs to be examined within a robust framework between HCWs in the Jordanian setting. However, the empirical examination on the mechanisms and/or additional routes through which this relationship occurs and/or is further explained is limited. Hence, for a more in-depth and better understanding (Mathieu, DeShon, & Bergh, 2007; Wu & Zumbo, 2008) and in cases in which a strong relationship between the predictor and a criterion variable has been established, the introduction of a mediator variable is warranted (Baron & Kenny, 1986; Cohen, Cohen, West, & Aiken, 2013; MacKinnon & Luecken 2008; Muller, Judd, & Yzerbyt, 2005). Consequently, in the safety research area, this need has been established. These mediator variables include, for example, safety knowledge and safety motivation (Vinodkumar & Bhasi, 2010), knowledge-related job-characteristics (Lievens & Vlerick, 2014), work climate (Dahl & Olsen, 2013), safety control (Huang, Smith, & Chen, 2006), and safety climate level (Luria, 2010).

Therefore, the examination of the work environment as a mediator in the association between SMPs and safety performance is theoretically and practically appropriate. This is in the sense that better SMPs, as expressed by management activities, better shape the perceptions of the nurses of a better work environment, which should positively affect their safety performance outcomes. The work environment has been noted to be critical to workers for improved safety performance (Clarke, 2006; Geiger-Brown & Lipscomb, 2010; Kwon & Kim, 2013). Additionally, the introduction of the work environment as a mediator in the context of the proposed research is that the Social Exchange Theory (SET) (Blau, 1964) supports this position. Better SMPs should positively sharpen the perceptions of the nurses about how good their working environment is, which would, in turn, positively affect their safety performance behaviours.

Hence, this present study examined the association between SMPs and safety performance with the work environment as a mediator among nurses in Jordan. While stand-alone studies on the association between SMPs and safety performance have been done, a literature review indicates scant research in the Jordanian setting. Most studies have been done in work-settings and among workers in advanced technological systems. A study that examines the selected SMPs, work environment, and safety performance is unavailable in the safety research area in Jordan and especially among nurses in Jordanian hospitals (Al-Bsheish et al., 2019). Thus, this study is the first in this regard. The expectation is that the outcomes of this study lead to proposed potential mechanisms for improving safety performance among Jordanian nurses.

1.3 RESEARCH QUESTIONS

In view of the study's background and problem statement as succinctly discussed above, the following research questions are proposed:

1. What is the level of safety performance among nurses in the Jordanian healthcare setting?
2. What is the relationship between safety management practices (management commitment to safety, safety training, safety communication and feedback, safety rule and procedures, workers' involvement in safety, safety promotion policies, and cooperation facilitation) and safety performance (safety participation, safety compliance, and risky behaviours) among nurses in the Jordanian healthcare setting?
3. What is the mediating role of the work environment in the relationship between safety management practices (management commitment to safety, safety training, safety communication and feedback, safety rule and procedures, workers' involvement in safety, safety promotion policies, and cooperation facilitation) and safety performance (safety participation, safety compliance and risky behaviours) among nurses in the Jordanian healthcare setting?

1.4 RESEARCH OBJECTIVES

The following research objectives are proposed based on the research questions:

1. To ascertain the level of safety performance among nurses in the Jordanian healthcare setting;
2. To determine the association between safety management practices (management commitment to safety, safety training, safety communication and feedback, safety rule and procedures, workers' involvement in safety, safety

promotion policies, and cooperation facilitation) and safety performance (safety participation, safety compliance, and risky behaviours) among nurses in the Jordanian healthcare setting; and

3. To access the role of nursing work environment mediating in the relationship between safety management practices (safety training, safety communication and feedback, management commitment to safety, safety rule and procedures, workers' involvement in safety, safety promotion policies, and cooperation facilitation) and safety performance (safety participation, safety compliance and risky behaviours) among nurses in the Jordanian healthcare setting.

1.5 SCOPE OF THE STUDY

This research examines the association between SMPs and safety performance, with the characteristics of the work environment as a mediator in the relationship among Jordanian nurses in the Ministry of Health. Accordingly, although the association between SMPs and safety performance has been examined across a myriad of work settings and diverse categories of workers, more needs to be done in terms of suggesting which SMPs are best in improving safety performance indicators.

The present study was being undertaken among nurses in the Jordanian public healthcare setting based on the following reasons. First, based on their job roles and skills, workers across various industries including healthcare are routinely exposed to occupational threats and hazardous work conditions (Xia et al., 2017; Hofmann et al., 2017). Second, the healthcare work environment is not conducive enough to reduce hazardous conditions in Jordan (Al-Hamdan, Manojlovich, & Tanima, 2017), which leads to an increased number of accidents as well as higher levels of accident severity

(Johari, Yean, & Adnan, 2017) especially in the Jordanian workplace setting (Ana, 2017).

Nurses are among the occupations with high-risk exposure to hazardous and injury-causing situations (Elmi et al. , 2018; Zohar, Werber, Marom, Curlau, & Blondheim, 2017; Kezic, 2018). Also, although clinics are set up for the treatment of diseases, they are among the places in which various infections are most often contracted (Chowdhary, Sharma, & Meis, 2017). Characteristically, these infections occur primarily while capping injections, taking blood samples for further laboratory analysis, and due to inadequate waste management systems. Also, surgeons and theatre nurses have reported injuries or contact with blood/body fluids while conducting serious or minor procedures (Martins et al., 2012).

In this study, the required nurses must meet the following criteria: they should have at minimum of a bachelor 's degree, have their practicing license issued by the Nursing Council of Jordan, and must be a full-time employee at one of the country's public hospitals (Algol, 2016). According to the statistics provided by JMoH (2016), the total number of registered nurses working in public sector hospitals in Jordan was 4,730 in 2016.

The SET guides this research (Blau, 1964). The SET advocates reciprocity of gestures. It presupposes that if one receives adverse treatment from another person, then the person who is being treated negatively will, in turn, display negative attitudes and tendencies towards the person who negatively treated them. In relating the SET to the study, it is expected that when the management of healthcare facilities in Jordan is committed to the safety and health of the nurses, then the nurses will have positive perceptions towards their work environment, which will, in turn, lead to observing the rules and procedures on organisational safety and participating in activities that will improve the safety of facilities.

This study is a quantitative research using the cluster sampling technique in a cross-sectional design, and the data were gathered via a survey from eight JMoH hospitals including Abu-Obaidah, Al Yarmouk, AL-Ramtha, Princess Basma, Princess Badea', Princess Raya, Princess Rahma and Mua'th Bin Jabal hospitals with randomly selected individuals. Thus, the individual is the unit of analysis and will involve at least 357 nurses, and the data are analysed, utilising both descriptive and inferential statistics. Recommendations are then provided for policymakers and management to improve safety performance.

1.6 SIGNIFICANCE OF THE STUDY

This study focuses on improving safety performance in the healthcare sector in Jordan. Therefore, this study is expected to have theoretical, methodological and practical significance.

From a theoretical standpoint, several studies have been conducted on the relationship between SMPs and safety performance. However, to the knowledge of the researcher, no previous research has examined the above relationship with the work environment of nurses as a mediator. Obviously, the existing literature search revealed theoretical gaps. Cooperation facilitation is an under-researched SMP and is examined within the scope of this study. Besides, this study also used risky behaviour as the third component of safety performance.

The research is, therefore, significant as a contribution to theory as it is expected to suggest an evidence-based understanding as to how SMPs relate to the work environment of nurses, which, in turn, determines safety performance (compliance, participation, and risky behaviours). This study is an original and significant contribution to the body of knowledge in the safety research domain.

In view of the methodological contribution of this study, the proposed research is expected to add to the expansion of the SET (Blau, 1964). A further review of the management and occupational safety and health (OSH) literature suggests that most studies associated with the context of the present study were done in Western and Eastern countries and nations with well-developed and high technology-driven work systems and with similar cultures. There is a lack of research in the Jordanian setting, which is an underdeveloped country with less technology-driven systems. Additionally, Jordan has an Arab-Islamic culture that is fundamentally different from the Western culture.

Besides, this research examines empirical evidence of the theoretical linkages between the examined variables. For that to happen, established measures were adopted and adapted to ensure their compatibility with the context of the Jordanian health sector. Furthermore, the PLS-SEM path modeling was used to validate the measures and test the hypothesised linkages among the variables. Systematic assessment of the measures utilised in this study can assist future researchers in producing more reliable and valid measures.

In the clime of theory testing, and to the best knowledge of this researcher, this study is among the first to introduce SMP as a unidimensional construct. Also, this study used the reflective-formative hierarchical latent variable model in the simulations and empirical application as it has received only limited attention in the extant PLS-SEM literature, even though it is the most widely used type of model (Ringle et al., 2012).

Relative to practice, the findings from the current study are expected to propose ways to improve safety performance at the individual-employee (nurses) level in hospitals. The proposed research will also bring to light the most critical organisational factors and how these factors shape the willingness of nurses to improve safety performance indicators, and, by extension, lessen the number of work-related accidents. Industry practitioners and policymakers will then be encouraged to use the outcomes of this study to formulate result-oriented and evidence-based OSH master plans through appropriate legislative frameworks for implementation across the industry. This should also ensure the review of existing policies aimed at improving workplace safety, especially in Jordanian hospitals.

Equally important, the study serves as a guide to hospital administrators to recognise areas of weakness and strength in SMPs that require further intervention strategies to reduce occupational exposure to blood and other hospital-related exposure. This study is also expected to aid the management to identify training gaps in the hospitals. The study also assesses nurse's perception of the quality of execution of hospital safety policies and the associated effects of these perceptions. This is necessary as a better understanding of the management's actions toward safety practices can help hospitals align hospital-wide safety policies and regulations, promoting safety awareness, and involve workers in giving consideration to the importance of communicating safety with human behaviours to create a safer hospital work environment. Furthermore, knowing the perceived SMPs is expected to help the government in policy formulation to ensure the HCWs are safe and productive, especially for Jordanian hospitals.

1.7 DEFINITION OF KEY TERMS

The following is a list of concepts attached to the present study. In this context, the key terms will be defined as follows:

1. **Safety Management Practices** refers to the rules, procedures, strategies, and actions followed or implemented by the management aimed at warranting the safety of the employees in the organisation, positively influencing the attitudes and behaviours of employees concerning safety, thereby decreasing workplace accidents (Vinodkumar & Bhasi, 2010).

2. **Management Commitment to Safety** is defined as "the extent to which management is perceived to place a high priority on safety and acts upon that priority in an effective manner" (Smith, & DeJoy, 2014, p. 50).

3. **Safety Training** is a process of providing the necessary safety-related knowledge that workers should be aware of to guide them on how to work safely (Zaira & Hadikusumo, 2017).

4. **Worker involvement** is the process of involving workers in safety decisions, participating in solving safety problems, and consulting with workers on safety issues (Vinodkumar & Bhasi, 2010).

5. **Safety Communication and Feedback** is a process known to promote mutual understanding and two-way communication between the employer and employees on the organisation's safety and goal requirements (Jaafar, Choong, & Mohamed, 2017).

6. **Safety Rules and Procedures** is defined as the extent to which organisations create clear missions, assign clear roles and responsibilities, establish standards for monitoring employee behaviours, and institute systems for correcting workers' unsafe behaviour (Lu & Yang, 2011).

7. **Safety promotion policies** refer to an organisation's strategies set up to encourage reporting hazards and create awareness among employees (Vinodkumar Bhasi, 2010).

8. **Cooperation Facilitation**, as a component of SMPs, revolves around encouraging employees to cooperate in solving safety issues. (Yorio & Wachter, 2014).

9. **Work Environment** is defined as "the organisational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178).

10. **Safety Performance** refers to the activities or conduct that people display in places of work to promote the health and safety of employees, customers, the public, and the environment (Griffin & Curcuruto, 2016).

11. **Safety compliance** refers to **e**mployee adherence to safety procedures and the behaviour exhibited in performing work safely (Neal et al., 2000).

12. **Safety participation is** defined as the behaviours that do not directly contribute to an individual's safety, but which help to develop an environment that supports safety (Chen & Chen, 2014).

13. **Risky behaviour** is defined as "Any acts that increase the likelihood of an accident occurring" (Martínez-Córcoles & Stephanou, 2017, p. 94).

14. **Nursing** is a profession in the healthcare sector that focuses on caring for communities, families, and individuals so that they can attain, restore or maintain optimal level quality of life and health (Nursing, n.d.). In this study, nurses refer to the registered nurses at the JMoH.

1.8 ORGANISATION OF DISSERTATION

This dissertation is divided into five chapters. Chapter one presents the study background, problem statement, research questions and research objectives, scope, and significance of the study. Section two includes an overview of the three vital variables of the study: SMPs as a unidimensional construct (consisting of management commitment, safety promotion policies, safety training, safety rules and procedures, safety communication and feedback, the involvement of workers, and cooperation facilitation), work environment as a mediator, and the safety performance construct (safety participation, safety compliance, and risky behaviours). The chapter also highlights the historical perspective of safety performance. Besides, the nursing work environment as a potential mediator on the relationship between SMPs and safety performance is discussed. Chapter two discusses the conceptual framework extracted from a review of the literature, hypotheses development, and the underpinning theories in this study.

Chapter three offers the research methodology utilised in this study. Specifically, the section discusses the study population, sample and sampling technique, pilot study, content analysis of the adopted items, data collection procedure, techniques of data analysis, and overview of measurement perspectives. In chapter four, the descriptive analysis of the study respondents, empirical results, main findings of the study, and tests of hypotheses are presented. Lastly, chapter five offers a detailed discussion of the results, recommendations for future research, implications, the study's limitations, and concluding remarks.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter discusses the state of varied empirical thoughts in relation to safety performance. The essence of examining these thoughts is to help facilitate a more in-depth and cutting-edge understanding of a variety of factors that are capable of determining various safety performance outcomes. This section begins with an overview of the concepts of safety performance. It then offers a description of relevant safety performance studies and how safety performance is measured with subjective and objective parameters. After that, SMPs as critical factors capable of determining safety performance outcomes are then discussed along with the work environment as a mediator, which is highlighted further. Additionally, the hypotheses development, underpinning theory, and framework development are included in subsequent parts of this chapter.

2.2 OVERVIEW OF JORDAN

Jordan is situated in the Middle East, stretching about 500 kilometres from north to south and has a total population of 9,531,712, which includes 6,613,587 Jordanians (JMoH, 2016). Amman is the capital and has a large share of the population (Krafft, Razzaz, Keo, & Assaad, 2019). There is mild weather around the nation with four seasons, and in winter, it has a temperature of 0 degrees Celsius to 38 degrees Celsius in the summer (JMoH, 2016). As shown in Figure 2.1, Jordan is separated into three regions (middle, northern, and southern) and twelve governorates, each region comprising four provinces. The central area (Amman, Balqaa, Zarqa, and Madaba) constitutes about 61.0% of the total population, with a population density of 249.7

persons per square kilometer. The north region includes (Irbid, Mafraq, Jarash, and Ajloun), which comprise 29.6% of the population with a population density of 55 persons per square kilometer. The south region includes (Karak, Tafila, Ma'an, and Aqaba), which constitute 9.5% of the population with a population density of 11.7 per square kilometer (JMoH, 2016).

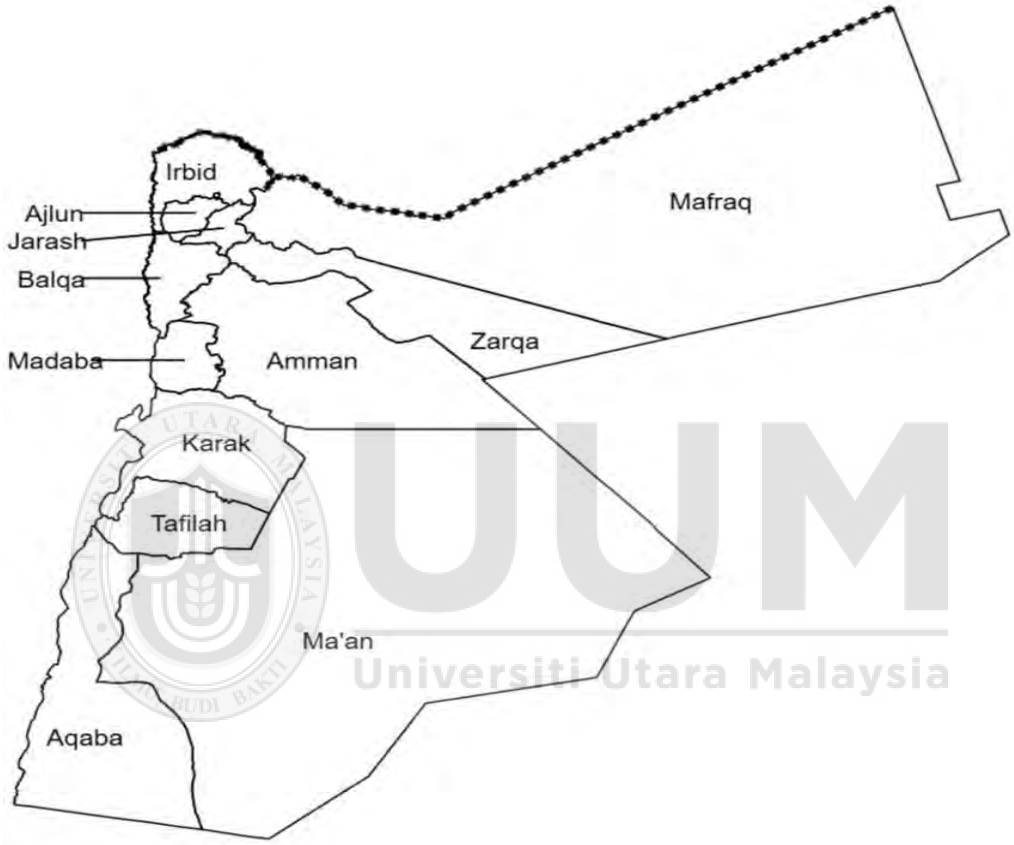


Figure 2.1
Map of the Jordanian governorates
Source: Krafft et al. (2019)

Jordan's healthcare sector is categorised into three key areas, which can be seen in Figure 2.2. They are the private sector, the public sector, and the non-profit organisation. The public sector consists of the Ministry of Health (MoH), the Royal Medical Services (RMS), and the University Hospitals (UH). All Jordanians can get all levels of care that are delivered by primary, secondary, and tertiary healthcare services in 32 hospitals in different regions (JMoH, 2016). The ministry of health gives the health services for free to all people who have government health insurance, and it provides the services at a nominal fee for those not covered by governmental health insurance.

Figure2.2
Jordan's healthcare sector.
Source: Annual Report of High Health Council (HHC) as obtained from national human resources for health observatory section, HHC, 2018 - 2022

The Royal Medical Services of Jordan (JRMS) provides healthcare services at 14 hospitals throughout the kingdom. It is the responsibility of the Higher Military Command to manage each of these hospitals. The services are provided to the worker or their diplomatic people dependents, retired military, security, and armed forces members.

Also, the public healthcare sector includes university hospitals, such as the Jordan University Hospital and King Abdullah Hospital, which constitute nine percent of the total hospitals' beds (JMoH, 2016). In contrast, in 62 hospitals, the private sector provides health services to patients (JMoH, 2016). Each of these hospitals are managed by the executive board of directors.

Ultimately, the international and voluntary sector, which comprise non-governmental organisations, offers healthcare services citizens in certain regions, such as the services provided to the Palestinian refugees by the United Nations Relief and Works Agency (UNRWA) (JMoH, 2016).

2.3 SAFETY PERFORMANCE

2.3.1 Definition of Safety

Researchers have defined safety in various ways based on the nature of their research. However, one common factor of their definitions is that safety is used to refer to the state of being “safe” (Ale, 2009). Safety is also used to refer to a state of being relatively free from danger, risk, the proclivity for harm, injury (Safety, 2018), or loss to workers and/or the workplace, which may be caused deliberately or accidentally (Aven, 2013). It also denotes the ability to control hazards to achieve a satisfactory level of risk (Hofmann et al., 2017; Kabir et al., 2018; Pagell, Veltri, & Johnston, 2016; Beus et al., 2016; Woolston, 2015).

2.3.2 Definition of Performance

A number of definitions have been suggested for performance. Performance is related to considerably good standing with the theorised conception of what a job/task role requires (Bennett, Lance, & Woehr, 2014). Relatedly, Yaghoubi, Mahmodpour, Moloudi, and Sarayani (2017) posits that performance comprises the definite outputs or an organisation’s results as evaluated against its projected outputs (or goals and objectives). Typically, performance is measured from financial, behavioural, or related perspectives (Al-Damen, 2017; Glavan & Vukšić, 2017; Mutunga & Owino, 2017). However, for the purposes of this study, performance will denote the outcomes, effects, and aftermaths of actions of an organisation over a definite period of time (Kabir et al., 2018; Wang, Wang, & Xia, 2018).

2.3.3 Definition of Safety Performance

Safety performance is founded on the nature and context of past studies. Some reviewed safety performance with respect to laws and regulations and activities aimed at improving safety in organisations (Xia et al., 2018), which is ordinarily self-reported (Andersen et al., 2018), and is directed at eventually advancing the health, safety and welfare of workforces (Zahoor et al., 2017). Other researchers refer to safety performance from an organisation's safety level as reflected in the inactions or actions of the organisational members, structures and systems (Jahangiri et al., 2017; Gunduz & Laitinen, 2018; Fernandez-Muniz et al., 2017). Griffin and Curcuruto (2016) and Hon, Chan, and Yam (2014) view safety performance as activities or conduct that people display in the workplace to promote the health, safety, and welfare of employees, customers, the public, and the environment.

In the opinion of the researcher, the above definitions are all-encompassing as they relate to reactive and proactive views of what safety performance constitutes. Typically, safety performance has also been utilised to refer to the safety level as measured through metrics such as workplace accidents, injuries, and fatalities (Curcuruto, Conchie, Mariani & Violante, 2015; Mullen et al., 2017; Wu, Liu, Zhang, Skibniewski, & Wang, 2015). Characteristically, accident indicators (Vinodkumar & Bhasi, 2010) and human factor components (Cooper, 2015; Curcuruto et al., 2015; Mullen et al., 2017) are noted as core components of safety level indicators in organisations. In this context, safety performance signifies the proclivity for accidents to occur that may or may not give rise to injuries, fatalities, or property damage (Erdogan et al., 2018).

In view of the above definitions, organisations must ensure improved safety performance indicators to prevent their employees from becoming involved in and suffering from accidents (Erdogan et al., 2018; Osman, Awang, Hassan, & Yusof, 2015; Wachter & Yorio, 2014). Mostly, the above submissions make maintaining safety challenging for organisations (Clarke, 2016; Hofmann et al., 2017). Consequently, some researchers posit that one crucial factor in the success of any organisation is how such organisations can successfully prevent occupational accidents from occurring (Erdogan et al., 2018; Shahin, Naftchali, & Pool, 2014). Kaynak, Toklu, Elci, and Toklu (2016), and Zohar and Polachek (2014) claimed that a crucial constituent of the performance measure of any organisation should be the safety performance level in those organisations, regardless of any other organisational performance indicators.

The above definitions of safety performance bring to light the importance of safety performance in organisational studies. Safety performance is vital to the whole performance of organisations as it reduces accidents, injuries, fatality rates, and the attendant costs of the possible occurrences of these events. Hence, organisations allot many resources to ensure that safety is given the attention that it deserves (Curcuruto et al., 2015; Osman et al., 2015).

Efforts by organisations to ensure improved safety performance outcomes have been noted in terms of their efforts to ensure a reduction in accidents, fatalities, and injuries and improve safety-related behaviours among their employees. In the current study, safety performance is examined as behaviours that enhance safety in the workplace. These behaviours, which have been considered as components of safety performance in previous studies, are safety compliance, safety participation, and risky behaviours.

2.3.4 Importance and Measurement of Safety Performance

Improving safety-related behaviours and how these behaviours act to ensure improvements in the workability of the technical systems and improved profitability of organisations is a noteworthy topic for study (Clarke, 2013; Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2012). Attention is directed to boost safety in the workplace due to the increasing number of accidents, injuries and eventual fatalities in that environment (Al-Haadir, Panuwatwanich, & Stewart, 2013; Fernández-Muñiz et al., 2014; Hofmann et al., 2017; Jeong & Lee, 2017).

On the other hand, poor safety performance has become a considerable worry for companies because poor safety is a cause of enormous indirect and direct costs (Namian et al., 2016; Battaglia et al., 2014). Indeed, using safety performance indicators in building a responsible, prolific, and operational organisation is of great value (Kaynak et al., 2016).

Typically, direct costs accrue to companies in the form of expenses for medical eventualities, death claims, claims from permanent incapacitation, legal and litigation expenses, and equipment damage, among others. In contrast, indirect costs of work-related accidents accrue to companies in the form of production losses, absenteeism from work, insurance costs, employee turnover, pain, suffering and grief (Jong & Baek, 2017; Martín-Román & Moral, 2017). Additionally, Kabir et al. (2018) noted that accidents can damage an organisation's image based on both the occurrences and severity of accidents. For all these reasons, organisations must put in place mechanisms to ensure a drastic reduction of the causes of accidents, injuries, and fatalities.

One metric of safety performance that is often used is accidents, injuries and fatality rates (Yiu et al., 2019), which are often noted as being reactive or subjective measures (Hon et al., 2014; Lingard, Wakefield, & Blismas, 2013). Several studies have utilised injury and accident data as conspicuous measures of safety performance across diverse work settings (Luria, 2010; Vinodkumar & Bhasi, 2009; Williams, Mccartt, Mayhew, & Watson, 2012). Vinodkumar and Bhasi (2010) claimed that this style is of measuring safety performance is the "traditional" way of the methodology (pp. 2084). Thus, advocates of changing the way in which safety performance is measured have opined that measuring safety performance based on behaviour-based indicators would be better because behaviour-based indicators are proactive rather than reactive in nature (Gopang, Nebhwani, Khatri, & Marri, 2017).

Cooper and Phillips (2004) argued that using reactive indicators like accidents, injuries rates and compensations is challenging, of dubious reliability and backward-looking. Other researchers are also of the view that these are after-event measures (Chen, McCabe, & Hyatt, 2017; Fernández-Muñiz et al., 2017; Hofmann et al., 2017; Mullen et al., 2017). Thus, Connor and Philipps (2004) proposed that measuring safety performance should be based on a strategy combination to enable organisations to assess the actual situation of safety among their employees based on behaviour-based traits and characteristics. Nonetheless, the above positions do not suggest discontinuing the use of accident rates in measuring safety performance per se because these traditional metrics are still relevant within the contexts of empirical studies in the safety research area based on the nature of the research undertaken.

Over the years, scholars have examined safety performance based on accident prevention and behaviours that are capable of improving workplace safety (Chen et al., 2017; Erdogan et al., 2018; Ford & Tetrick, 2011; Gopang et al., 2017; Huang et al., 2012; Jazayeri & Dadi, 2017; Smibert & Fleming, 2017; Tang, Leiliabadi, & Olugu, 2017). Basically, these studies strongly advocate for the prevention of accidents. They noted that the prevention of accidents not only counts for the safety performance of an organisation but also counts for non-safety and general organisational outcomes.

Neal and others (Griffin & Neal, 2000; Neal & Griffin, 1997; Neal, Griffin, & Hart, 2000) were among the first to expand safety performance measurements as a two-dimensional construct. They based their efforts on the work of Borman and Motowidlo (1993) and Cempball, McCloy, Opplar, and Segar (1993), who had proposed contextual performance and task performance as constituents of job performance. Contextual performance denotes voluntary undertakings that contribute to the psychological and social ideologies of the organisation, and task performance indicates official and spontaneous work-related activities that contribute to organisational goals and objectives.

In applying these concepts within the scope of the health management domain and occupational safety, Neal and colleagues envisioned the two job performance constructs of contextual performance and task performance to be safety participation and safety compliance as two components of safety performance (Girffin & Neal, 2000; Neal & Griffin, 1997). They specifically noted that safety compliance denotes activities promoting adherence to safety procedures and working safely (Neal et al., 2000). Also, safety compliance indicates formal on-the-job activities that include guaranteeing safe working environments, observing safety procedures and rules, and using suitable personal protective equipment (Hu, Griffin, & Bertuleit, 2016; Kvalheim & Dahl, 2016; Martinez-Corcoles & Stephanou, 2017; Mullen et al., 2017).

Violations of safety rules and procedures are common across industries such as mining (Donovan, Salmon, Lenné, & Horberry, 2017; Jacobs & Pienaar, 2017), transport (Olympia, Weber, Brady, & Ho, 2017; Smibert & Fleming, 2017), construction (DeArmond, Huang, Chen, & Courtney, 2010; Grill, Pousette, Nielsen, Grytnes, & Törner, 2017; Panuwatwanich, Al-Haadir, & Stewart, 2017) and petroleum (Dahl, 2013; Dahl & Kongsvik, 2018; Hosny, Ea, & Ea, 2017). Often, when workers take risks, Hofmann et al. (2017) argued that such actions are not deliberate because unsafe acts are reinforced naturally. Therefore, the activities, practices, and procedures that are supposedly thought to be natural reinforcements of the behaviours of workers in following safety procedures and rules should be noted.

By contrast, safety participation is considered according to Neal, Griffin, and Hart (2000) as follows: "helping co-workers, promoting the safety program within the workplace, demonstrating initiative, and putting effort into improving safety in the workplace." (p. 101). Fernández-Muñiz et al. (2017), Neal and Griffin (2006) and Petitta, Probst, Barbaranelli, and Ghezzi (2017) are, however, of the view that these activities may not lead to safety in workplaces but rather assist in building an environment supportive of safety. For example, these encompass activities that stimulate safety in the place of work and helping co-workers in doing their jobs in as safe a manner as possible (Cornelissen et al., 2017).

Safety participation is often seen as going beyond formal job performance roles and attaining the level of extra-role initiatives. This is, however, is reflected in the level of involvement and commitment that employees are exposed to on safety-related subjects (Martínez-Córcoles & Stephanou, 2017; Thurston & Glendon, 2018).

The operationalisation and measurement of safety performance as a multidimensional construct can be examined from the perspective of a combination of human, technological and organisational level aspects in accident causation and possible prevention (Carnino, Nicolet, & Wanner, 1990; Reason, 1990). Wiegmann et al. (2004) examined studies devoted to the development of a safety culture. As a consequence of this meta-analysis, they found that several different perspectives exist for developing a safety culture, including human error, socio-technical (Hendrick, 1991; Rassmussen, 1986), and organisational culture (Gordon, Flin, Mearns, & Fleming, 1996).

Each of these perspectives focused on a different source of accidents. From the human error perspective, human mistakes rather than mechanical failures are seen as the source of a systems breakdown. The socio-technical aspect concentrated on the interaction of human errors and machine failures as causes of accidents and mistakes (Carayon et al., 2015; Robertson et al., 2015). Lastly, organisational culture as a safety culture state accounts for safety-related characteristics of the system, work, and organisational design and the use of technology (Martinez-Carcoles, Gracia, Tomas, & Peiros, 2011).

Loeppke et al. (2015) noted that safety is a system property and not a component of the general organisation; thus, safety should be managed from a system point of view instead of an element of the general system. To manage safety and safety-related outcomes effectively, an understanding of the various parts of the organisation and how they interact to achieve set organisational goals and objectives must be present (Chen & Chen, 2014; Martínez-Córcoles et al., 2011). One component of an organisation having a critical role to play in accident causation with respect to interactions with organisational technicalities is the social aspect.

Based on the discussion above, two principal components of the definition of safety behaviours will be utilised and examined in the current study. First, safety behaviours are behaviours representative of safety participation, and safety compliance thus is regarded as a component of safety performance (Casey, Griffin, Flatau, & Neal, 2017; Mullen et al., 2017; Vinodkumar & Bhasi, 2010). Second, when workers behave in satisfactory ways, this behaviour does not merely denote compliance with an organisation's rules and procedures or partaking in safety-related and promotional activities that encourage safety in the workplace enhancements (Fernández-Muñiz et al., 2012). It also denotes working in ways that decrease worker exposures to risks and workplace hazards (Hofmann et al., 2017; Martínez-Corcoles et al., 2014; Willis, Clarke, & O'Connor, 2017). As such, components of safety behaviours are also referred to as components of safety performance; an interchangeable use of these nomenclatures is allowed and has been so used in previous studies (Al-Bsheish et al., 2019; Al-Haadir et al., 2013; Cooper & Phillips, 2004; Vinodkumar & Bhasi, 2010; Fernández-Muñiz et al., 2014, 2017; Zhang & Wu, 2014).

The above discussion brings to the surface the prevalent factors used in measuring safety performance, which are accidents and injuries, safety compliance, and safety participation. Interestingly, risky behaviour is another under-researched constituent of safety performance (Brown, Subramaniam, & Ali, 2017; Martínez-Córcoles & Stephanou, 2017) that is worth examining owing to its striking relationship with safety performance.

Relatedly, risky behaviours are acts that increase the likelihood of an accident occurring (Martínez-Córcoles & Stephanou, 2017). Ramanujam and Goodman (2003) noted that risky behaviours are a move from regular organisational practices, processes, and expectations that do not necessarily lead to instantaneously adverse penalties and create circumstances that make these consequences more likely to create a situation that they described as latent errors (Martinez-Carcoles et al., 2013; Richmond, 2014).

Along a similar line of thought, Rotundo and Sackett (2002) acknowledged the concept of counterproductive performance behaviour and suggested its integration in further empirical endeavours. Martínez-Córcoles and Stephanou (2017) contrasted risky behaviour with counterproductive behaviour. They noted that risky behaviours are a shift from observing the safety-related procedures inherent in organisations that may not necessarily lead to unprecedented safety-related events. In several studies, safety compliance and safety participation have been examined as constituents of safety performance (Curcuruto et al., 2015; Lievens & Vlerick, 2014; Mullen et al., 2017; Vinodkumar & Bhasi, 2010), and risky behaviours as a single component of safety outcomes (Bosak, Coetsee, & Cullinane, 2013; Martínez-Córcoles et al., 2011, 2013).

In further supporting the choice of measuring safety performance based on antecedent factors, the argument has been made that the use of data from accident and injuries in measuring safety performance has become problematic, insensitive, suspicious, unstable, retrospective and does not always consider exposures to risks by workers (Fernandez-Mauñiz, Montes-Peon, & Vezquez-Ordos, 2007).

In further highlighting the need for the use of behaviour-based approaches in measuring safety performance, it must be kept in mind that the safety-related behaviours of workers prove their values, beliefs, attitudes and perceptions towards safety (Kao, Spitzmuller, Cigularov, & Thomas, 2017; Martínez-Córcoles et al., 2011; Mohammadfam et al., 2017). Additionally, Phua (2017) and Yule, Flin, and Murdy (2006) argued that risk-taking behaviours are a viable outcome in safety research. Hence, the inclusion of this dimension for measuring safety behaviour within the context of the present study is conceptually appropriate (see, for example, Bosak et al., 2013).

A number of major industrial disasters prompted safety researchers to focus on the need to examine and understand the importance of human-related factors and how these have acted as major contributors to accident causation and avoidance alike (Reason, 2017; Salmon et al., 2017). Generally, earlier studies in the safety management domain suggested that individual characteristics such as personality traits and attitudes had some form of connection to the catalysts of accidents in the workplace (Hansen, 1989; Sutherland & Cooper, 1991). It has been noted that individual characteristics were critical in contributing to workplace accidents, and, in the investigation of the root causes of accidents, the “human error” factor was always the overarching factor. Nevertheless, the behaviours of employees that included risk-taking propensities are a function of different types of organisational factors (De Decker, Tölken, & Roos, 2017; Woods, Dekker, Cook, Johannesen, & Sarter, 2017).

Based on these arguments, researchers and industry practitioners began to identify and suggest the implementation of practices to organisations that were able to influence workers' behaviours to enhance safety performance results (Kao et al., 2017; Zohar, Huang, Lee, & Robertson, 2014; Cigularov, Chen, & Rosecrance, 2010; Bayram, 2019; Al-Bsheish et al., 2019). Despite a large number of empirical studies in the safety research area aimed at proposing workplace practices capable of boosting safety performance outcomes, the elimination of many dangers and hazards from the workplace has not yet been achieved (MaGuire, 2017). For that purpose, a call for additional research to examine workplace and organisational practices and how they can produce high safety performance outcomes across industries has been made (Ioannou, Harris, & Dahlstrom, 2017; Durdyev, Mohamed, Lay, & Ismail, 2017; Martínez-Córcoles et al., 2013, 2014; Kim, Rahim, Iranmanesh, & Foroughi, 2019).

The current study seeks to answer that call within the context of the Jordanian nursing profession. To achieve the purposes of the current research, safety performance will be measured with items of safety compliance, safety participation, and risk-taking behaviours at the employee level. The present study proposes to examine a combination of the above safety-related behaviours within the context of the nurses working in public health facilities in Jordan.

2.3.5 Empirical Studies on Safety Performance

It has been noted that accidents, injuries, fatalities, and behaviour-based outcomes are used in measuring safety performance. In the succeeding paragraphs of this research, a number of studies related to safety performance across a number of settings and geographical locations will be examined. Notably, however, measures and strategies meant to stimulate high safety performance outcomes have been put into place in light of the growing number of accidents, injuries and fatalities among workers and within organisations (Griffin & Hu, 2013; Hoffmeister et al., 2014). Moreover, organisations have been making deliberate efforts to create systems, procedures and strategies that directly and/or indirectly affect the behaviours of workers with respect to working safely, and, by extension, reduce the number of accidents, injuries and fatalities (Clarke, Guediri, & Lee, 2017; Wang et al., 2018).

Safety performance has been examined with several organisational factors. These include, for example, job controls and job demands (Li et al., 2013;; Bronkhorst, 2015), dispositional mindfulness (Bodenlos, Wells, Noonan, & Mayrsohn, 2015; Malinowski & Lim, 2015; Zhang & Wu, 2014, 2015), personal characteristics (Clarke & Robertson, 2005; Sinclair, Martins, & Sears, 2010; Zhang et al., 2013), organisational factors (Hasan & Jha, 2013; Hadikusumo, Jitwasinkul, & Memon, 2017; Jitwasinkul, Hadikusumo, & Memon, 2016), safety culture (Memon et al., 2019; Stemn, Bofinger, Cliff, & Hassall, 2019; (Kalteh, Mortazavi, Mohammadi, & Salesi, 2019; Gao et al., 2019), incentives schemes (Maslen & Hopkins, 2014), job insecurity (Guo et al., 2019), safety climate (Chen et al., 2017; Bosak et al., 2013; Kalteh et al., 2019; Singh & Verma, 2019), leadership (Dahl & Olsen, 2013; Lievens & Vlerick, 2013; Mullen et al., 2017; Grill & Nielsen, 2019; Kurniawan, Kholil, & Sugiarto, 2019), and SMPs (Choudhry, 2014; Vinodkumar & Bhasi, 2010; Wachter & Yorio, 2014; Wold & Laumann, 2015; Yiu et al., 2019; Hassan & Rahim, 2019; Winge, Albrechtsen, & Arnesen, 2019) amongst others. However, the researcher will discuss some of these studies and the findings obtained, and then narrow the discussion to SMPs, which is the central focus of this study.

Several scholars have examined the leadership and performance of safety. For example, Mullen et al. (2017) examined the moderating effect of safety-specific transformation leadership on the relation among perceived safety obligations and safety performance for employer attitudes using 115 (cross-sectional) and 140 (longitudinal) trade workers' samples. They found that perceived safety obligations of employers related positively to employee attitudes, safety compliance, and safety participation. The study of Lievens and Vlerick (2013) among 152 nurses in the Belgian healthcare setting noticed that transformational leaders influenced both aspects of health safety performance significantly and positively. They further determined that knowledge-related job characteristics mediated the relationship.

In a study of 103 Spanish process industry organisations, Fernadez-Muniz et al. (2017) tested and developed a structural equation model for the role of working conditions and safety leadership in safety performance. They found that environmental conditions, occupational hazard conditions and work pressure impacted safety compliance. Their study also found that safety leadership negatively affected work pressure and had an impact on occupational hazards and environmental conditions on safety incentives.

Zohar et al. (2014) tested the influence of the safety climate on safety behaviour among lone employees whose work environment promoted individual instead of shared or consensual climate perceptions. They presented a mediation path model connecting psychological safety climate antecedents and consequences as predictors of the driving safety of long-haul truck drivers in the United States at the individual level. Climate antecedents comprised dispatcher (distant) leadership and driver work ownership, two contextual attributes of lone work, and its proximal consequences encompassed driving safety. Safety outcomes were gathered for six months using GPS-based truck deceleration data. The results indicated that distant leadership style and work ownership encouraged psychological safety climate perceptions, with the subsequent prediction of unsafe events that driving safety mediated.

O'Leary (2016) observed the effect of safety culture and ethical leadership on safety performance among 305 fractional jet pilots in the United States in a related research. He found that the safety culture had a significant positive and robust effect on ethical leadership but did not predict the adherence to procedures significantly.

Sinelnikov, Inouye, and Kerper (2015) collected information from an expert panel of occupational and safety experts and found that several significant features such as actionability were effective leading indicators to describe modifiable factors (e.g., commitment and technical knowledge of senior executives) that could be connected with such characteristics.

Several scholars have studied the mediating effects related to leadership. Khan, Ahmad, and Ilyas (2018) investigated the impact of ethical leadership on an organisation's safety performance. In this relationship, they further examined the mediating effects of safety consciousness and safety culture. From the data collected among 230 employees of telecom companies in Pakistan, they found that ethical leadership positively and significantly affected organisational safety performance. However, safety consciousness and safety culture partially mediated the relationship. Similarly, Shen, Ju, Koh, Rowlinson, and Bridge (2017) examined the relationship between transformational leadership, safety climate and safety performance (behaviour) among 292 construction workers in Hong Kong. They determined that transformational leadership significantly impacted the safety climate that the safety-specific leader-member exchange mediated, and safety climate, in turn, impacted safety behaviour via safety knowledge.

Among 1,167 construction plumbers and pipefitters, Hoffmeister et al. (2014) investigated the relationship between transformational and transactional leadership with several safety results. They found that the majority of the variance in each safety outcome was due to idealised attributes and behaviours, and the least amount of variation was due to active management-by-exception and individualised consideration. These findings imply that construction leadership development programs should address multiple different leadership elements, such as concrete skills and behaviours.

Martínez-Córcoles et al. (2013) examined team leadership and its effect on safety performance among 479 workers in two nuclear power plants, which required high reliability. The results suggested that the empowering behaviours of leaders generated both higher safety compliance behaviours and more top safety participation behaviours by team members, and that risky behaviours were reduced. Empirical support was obtained for hierarchical linear modelling linking leadership and safety performance behaviours.

Furthermore, Dahl and Olsen (2013) in a survey of 10,003 oil-and gas-workers working on Norway's continental shelf noted the critical role of leadership in affecting the degree of safety compliance on offshore platforms. Analysis of the factor distinguished three dimensions of the working environment, including 1) abilities and worker involvement, 2) clarification of the role and 3) follow-up of the contractors. The SEM analyses determined that the involvement of leadership in day-to-day operations had a substantial and positive impact on the degree of safety compliance on offshore platforms. The effect of involving leadership was determined to be direct as well as indirect, mediated by the three dimensions of the work environment.

In another study, Kark, Katz-Navon, and Delegach (2015) examined how transformational and transaction leadership styles influenced the safety behaviours of employees in Israel and at different times. In their findings, they noted that transactional leadership was related to safety improvement initiatives positively. They also determined that the situational promotion focus of followers mediated the positive association between transformational leadership and safety initiative behaviour.

In the area of dispositional mindfulness in the safety research field, Bodenlos et al. (2015) examined the connection between the facets of trait mindfulness with psychological and physical health using 310 students from a small, private college in the United States. They found that the observation facet of mindfulness had a negative association with physical health. Both acting with non-judging and awareness aspects were positively related to emotional well-being.

In another study, Martínez-Córcoles and Stephanou (2017) sought to examine the level of safety performance among 161 Hellenic special forces in a military setting to suggest ways of avoiding fatal accidents and ensuring operational effectiveness. A structural equation model showed that overall active transactional leadership had a significant impact on the performance of paratroopers through the safety climate. Notably, the safety climate fully mediated the relationship between contingent reward and the three performance behaviours.

2.4 SAFETY MANAGEMENT PRACTICES AND SAFETY PERFORMANCE

While a number of individual and organisational factors and their ability to influence safety performance outcomes were considered in the previous sections of this chapter, SMPs, being the core of this research, will now be discussed. Basically, SMPs have been defined by several researchers in the safety management research area. For example, Kirwan (1998) is of the view that safety management comprises practices and roles associated with organisational safety and employees.

Organisational safety is a function of the prevailing safety management system of the overall and more extensive organisational management process. Gershon et al. (2000) defined SMPs as practical policies and procedures set up by the management of organisations to prevent workplace and work-related accidents and injuries from occurring. In another study, Labodova (2004) opined that SMPs are mechanisms integrated into an organisation specifically tailored towards the control hazards concerning workers' health and safety.

Similarly, Diaz-Cabrare, Hernendez-Fernaud, and Isla-Diez (2007) defined safety management as methodologies put in place by organisations to forestall the occurrence of workplace incidences and accidents. Vinodkumar and Bhasi (2010) noted that SMPs are activities, policies, procedures, and strategies that the management of organisations implement which explicitly target the safety and health of their employees.

In very recent definitions, SMPs have been more clearly defined. Marín, Lipscomb, Cifuentes, and Punnett (2017) noted that SMPs are organisational efforts and related actions that assure the safety and health of workers and their places of work. In another study, Subramaniam et al. (2016) argued that SMPs are safety-related organisational practices that shape workers' perceptions of the level of management commitment to worker safety and workplace safety.

In another safety-related study, Jaafar et al. (2017) noted that SMPs are organisational practices that are intended to elicit appropriate safety behaviours from employees. The more positive the SMPs, the better safety-related behaviours are expected from the employees. Other researchers who defined SMPs based on the nature of their studies include Auyong, Zailani, and Surienty (2016), Chen and Chen (2014), Khalid, Hussain, and Ahmad (2016) and Nordlöf et al. (2017).

On the relevance of safety management, Nordlöf et al. (2017) and Gao et al. (2019) said that SMPs should be able to solve situations that could induce human errors. They further noted that this could be done by encouraging an increase in safety standards in workplaces. In essence, the success of SMPs in positively shaping the perceptions of employees is a function of the management commitment level, which is supposed to be manifested via various programs and actions geared towards reducing accidents in the workplace.

Various studies have attempted to ascertain the SMPs that influence or elicit safety performance outcomes across occupations. One premier study in this regard is that of Vredenburgh (2002), who investigated core management practices that can effectively reduce employee injury rates in the hospital environment. She noted that employee participation, training, recruitment practices, communication and feedback, management commitment, and reward systems are all the practices that can influence safety performance in terms of the predictability of accident rates. Accordingly, a summary of some SMP studies and safety performance is presented in Table 2.1.

Table 2.1
Summary of Studies on SMPs and Safety Performance

Author	Context	SMPs Examined
Razuri, Alarcón, and Diethelm (2007)	Construction-Chile	Safety orientation and specialised training for management, project planning, behaviour-based safety program, drug and alcohol testing, orientation and specialised training for workers, safety committee, pre-task planning, and safety incentives program.
Choudhry, Fang, and Ahmed (2008)	Construction - Hong Kong	Safety policy and standards, safety organisation, safety training, inspecting hazardous conditions, personal protective program, plant and equipment, safety promotion, and management behaviour.
Vinodkumar and Bhasi (2010)	Chemical - India	Management commitment to safety, safety training, safety rules and procedures, safety communication and feedback, and safety promotion policies.
Huang et al. (2012)	Restaurants – United States	Employees perceived safety training and management commitment to safety.
Wachter and Yorio (2014)	Mixed - United States	Worker involvement/influence, pre- and post-task safety reviews, safe work procedures, hiring for safety, cooperation facilitation, safety training, communication and information sharing, accident investigation, detection and monitoring, and safe task assignment (task-employee matching).
Chen and Chen (2014)	Airline-Taiwan	Safety management systems practices examined as a uni-dimensional construct.
Subramaniam et al. (2016)	SMEs-Malaysia	Management commitment, safety training, worker's involvement, safety communication and feedback, safety rules and procedures, and safety promotion policies.
Jaafar et al. (2017)	Facilities maintenance contractors-Klang Valley, Malaysia	Management commitment, workers' involvement in safety, safety training, safety communication and feedback, safety rules and procedures, and safety promotion policies.
Hassan & Rahim, 2019	Private medical laboratories in Selangor, Malaysia	Safety management systems practices examined as one construct.

Table 2.1 (Continued)

Author	Context	SMPs Examined
Yiu et al. (2019)	The construction industry in Hong Kong	Safety commitment by senior management, competency profiles, safety climate, project management, safety requirements and incentive.
Winge et al. (2019)	The construction industry in Europe	Construction complexity, organisational complexity, time, economy, contract management, planning, roles and responsibilities, project management, management commitment, safety climate, learning, performance evaluation, operative risk management, site management, staff management, hardware management.
Prasad (2020)	Construction organisation in India	Planning, organising, staffing, directing, controlling and coordinating safety activities.

In light of the above submissions and taking into account the predictive capabilities of the variables/constructs discussed above, this current study examines the association between SMPs of safety promotion policies, worker involvement in safety, safe work procedures, management commitment to safety, safety training, safety feedback and communication, and cooperation facilitation and safety performance (safety participation, safety compliance, and risky behaviours). The SMP variables selected in this study were based on their frequency of examination among studies across diverse work settings and demographic spread.

Additionally, these variables are examined in a work setting that has had scant research. Only a few studies in the Jordanian setting were conducted and especially in the healthcare setting and more particularly with a specific focus on nurses attached to public facilities (Dababneh et al., 2018; Eskandari et al., 2017; Bayram, 2019; Al-Bsheish et al., 2019). The healthcare sector was also investigated because of the need to have superior safety performance that will ultimately lead to a reduction in accidents, injuries, and possible fatalities.

Consequently, because practices of safety management and the various factors that make up its dimensions across multiple studies in a diverse socio-demographic milieu studies have been examined (as above), the researcher will now discuss the selected safety management factors that are examined as second-order, higher-order constructs in the context of the current research. The factors for the present study were chosen because of their frequent inclusion in safety management studies and based on their relevance to the field in focus. The factors were also selected because of their ability to predict safety performance (Vinodkumar & Bhasi, 2010; Wachter & Yorio, 2014). More specifically, the researcher narrowed down the SMPs most frequently used in the hospital and other healthcare sectors due to the related level of risks and possibilities of accidents. Frazier, Ludwaig, Whituker, and Roberts (2013) also suggested that it will be worthwhile to see some specific dimensions combined for SMPs to influence safety performance.

The selected SMPs will now be discussed on their own merits. However, in considering these factors, studies that specifically examine these factors as safety climate factors will also be noted. This is because these factors share similar characteristics, but the measurement shows slight differences.

2.4.1 Management Commitment to Safety

The commitment of management to safety is a crucial determining factor of safety performance in the workplace (Vinodkumar & Bhasi, 2010). "Management commitment to safety is the degree to which top-level management or organisations exhibit commitment to improving workplace safety, which is often displayed in the safety-related encouragement and support accorded employees" (Mooren, Grzebieta, Williamson, Olivier, & Friswell, 2014). This commitment from top-level management aids in shaping the perceptions of employees to function in the safest manner possible and by extending the improvement of their safety-related behaviour to reduce accidents, injuries and mortality rates (Bosak et al., 2013).

Typically, the management's involvement in safety committees, job training for employees, and the attention accorded safety in the phase of job design demonstrate their level of commitment (Zohar, 1980). Some studies have looked at management commitment to safety in association with its ability to influence safety performance outcomes in organisations (Mooren et al., 2014; Fernández-Muñiz et al., 2012; Hosny et al., 2017; Lunau, Dragano, Siegrist, & Wahrendorf, 2017; Feng, Acord, Cheng, Zeng, & Song, 2011; Huang et al., 2012; Laurent, Chmiel, & Hansez, 2017; Mufti et al., 2016; Vinodkumar & Bhasi, 2010; Tholén, Pousette, & Törner, 2013; Nordlöf et al., 2017; Al-Bsheish et al., 2019).

Some of the studies mentioned above are now to be discussed. Vinodkumar and Bhasi (2010) surveyed 1,566 workers of eight major accident danger industrial processing units in India. Safety of management commitment was among the SMPs identified as critical to employee safety and the workplace. Huang et al. (2012) studied 419 workers in a restaurant setting and found that management commitment to safety was a critical factor that shaped employees' behaviours in the organisations. In a context related to road safety, Mooren et al. (2014) investigated safety management interventions that can reduce injury outcomes. Adequate management commitment to the safety of workers was one key factor that predicted the occurrence of accidents among heavy vehicle transport workers.

Likewise, Feng et al. (2011) sought to understand the association between management commitment to safety and patient safety culture in a Chinese hospital. The analysis of data from 248 registered nurses revealed a high statistical significance for the association between management commitment to safety and patient safety culture. Fernandez-Muniz et al. (2012) used a sample of 131 OHSAS (Occupational Health and Safety Standard) 18001-certified organisations in Spain. They found that management commitment, and particularly communication, influenced safety performance. Tholén et al. (2013) used a longitudinal multi-level study to examine the cause-and-effect relationship among psychosocial conditions, safety behaviour, and safety climate among 289 employees in the Swedish construction industry. They observed that management commitment established safety performance results in the form of safety behaviours.

The study by Leurant et al. (2017) produced mixed outcomes on the impact of a perceived safety management commitment (PMCS) but argues that organisations must be aware of the critical role management serves in enhancing safety performance within an organisation. Likewise, Lunau et al. (2017) examined the role of SMPs in enhancing safety indicators among 12,284 employees across 17 European countries. They determined that psychosocial risk levels were commonly lower in nations with more advanced practices of management.

Similarly, in another study aimed at identifying specific factors affecting the safety performance of 176 and 148 workers of medium and large companies in Jordan, Al-Rafaie (2013) said that while the safety of management's commitment was not statistically significant in association with safety performance in terms of compliance and participation in medium-sized companies, the association was significant in large-sized companies.

Given the above-discussed studies, it seems that management commitment to safety is an essential element of SMPs. This position is based on the findings from studies conducted in several demographic, social, work settings, and demographic contexts. In addition, the review also implies a lack of research in the Jordanian environment, especially among nurses attached to public facilities. Thus, theoretical and knowledge gaps are present, and, as a consequence, research to address this issue and contribute to the existing literature in this field of study will be worthwhile. The other SMPs will now be discussed.

2.4.2 Safety Training

Training in safety is one of the essential SMPs that can create excellent safety performance outcomes across various organisations (Jafari et al., 2015; Namian et al., 2016; Demirkesen & Arditi 2015). In organisations, safety training is accomplished through formal orientation programs and on-going capacity-building programs. Furthermore, researchers have highlighted the strength of safety training in explaining safety performance outcomes as safety training is an accurate means of predicting accidents, and, by extension, shaping the safety behaviours of employees (Randles et al., 2010).

Specifically, safety training is defined as the transfer of knowledge relating to safety and how this knowledge so acquired can make workers work in a manner as safe as possible and with no exposures to their well-being (Law, Chan, & Pun, 2006). Safety training has been recognised as a critical SMP that can create excellent safety performance outcomes across industries (Maren et al., 2017; Rose & Rae, 2017; Manu, Mahomadu, Atah, Heng, & Kit, 2017). Safety training in organisations is conducted in the form of formal orientation programs and on-going capacity building programs that are used to measure workers' safety behaviour via indices.

Safety training has been recognised as a critical tool to verify overall organisational success and the success of OSH programs (Vinodkumar & Bhasi, 2010; Wachter & Yorio, 2014; Hofmann et al., 2017; Zaira & Hadikusumo, 2017). Reasons attached to this argument are that various safety-related training programs shape enhancements in behavioural attitudes and skills, which are catalysts to accident causation. Moreover, advances in safety-related outcomes are functions of systematically planned comprehensive OSH programs for new employees, mentorship and succession-planning programs, orientation for new staff, and enhancements in OSH systems (Barberanalli et al., 2015). Furthermore, organisations that are acknowledged as reporting lesser incident and injury levels have been linked to the effectiveness of organisational safety programs with very active safety training (Namian et al., 2016; Brahm & Singer, 2013).

Several studies have considered the importance of safety training as a core constituent of SMPs. In Brahm and Singer's study (2013) of 2,787 Chilean miners, experimental support was found in the relationship between training and accident reduction. However, they noted that it is vital to engage in more training on accident reduction for employees. In a study done in the Nigerian construction work setting, Okoye and Aderibigbe (2014) established a significant correlation between safety climate factors and safety behaviours among 861 employees, and safety training was one of those factors.

Indeed, safety training has been studied in several contexts. In the hazardous industrial work setting, Vinodkumar and Bhasi (2010) noted that safety training was most important in predicting safety knowledge and motivation and, by extension, safety compliance, and participation. The study was conducted among 1,566 hazardous industrial companies. In a survey of 419 restaurant employees, Huang et al. (2012) reported that the perceptions of employees about the training were one factor capable of determining safety injury occurrences and safety behaviours (compliance and participation). In support, Hassan and Jha (2013) and Khdair, Shamsudin, and Subramaniam (2011) said that the effectiveness of training programs resides in creating training needs assessments, conducting training according to those assessments, and, by extension, making changes to the working procedures.

Other researches also investigated safety training as a critical component in the deciding of safety performance (Tabish & Jha, 2015; Bieder, Gilbart, Journe, & Leroche, 2018; Gunduz & Laetinen, 2018; Ricci, Chiesi, Bisio, Panari, & Pelosi, 2016). However, after reviewing the related literature in the field of safety, it was noticed that there is a dearth of studies that address the context of how safety training affects safety (Eskandari et al., 2017; Bayram, 2019), especially among healthcare workers with nurses as a focus in the Jordanian setting (Dababneh et al., 2018; Al-Bsheish et al., 2019).

2.4.3 Safety Communication and Feedback

Feedback and communication of safety have been identified as significant factors that are capable of enhancing safety performance results in an organisation (Jin, Villari-Kohlert, Senaratne, Feng, & Zuo, 2015). Safety communication is a process that allows the interaction of people, tasks, processes and systems with a view to achieve improved safety-related behaviours. However, Vecchio-Sadus (2007) remarked that although safety communication can lead to enhanced safety behaviours, the way and/or the mechanisms through which this communication is done will determine the level of impact it will have on the employees, which will be displayed in their level of participation and compliance with the activities related to safety.

From the management perspective, Vredenburgh (2002) noted that feedback is co-joined relative to communication and the process. She said that by having a sound communication and feedback system, hazardous conditions that can cause accidents can be averted as the behaviour of workers is dependent on new occurrences. Furthermore, in improving safety performance outcomes in the shape of safety-related behaviours, Goetsch (2011) noted that safety managers should ensure the prompt dissemination of safety-related information to employees across the board.

Specifically, he noted that this dissemination could be achieved by way of regular and on-going safety meetings, management walkabouts, publications in newsletters, and e-mails, among others. Moreover, when feedback on safety-related concerns is brought to the attention of the management, information can be put on signposts, caution signs and directions. This has been described as a two-way safety communication system that has been judged as being the best in improving safety-related behaviours among employees (Vinodkumar & Bhasi, 2010). Some studies on the ability of safety feedback and communication as a stand-alone construct, a dimension of safety climate, or SMPs were not reviewed by the researcher.

In a study of 229 employees from different industrial sectors, Díaz-Cabrera et al. (2007) reported that workplace communication and feedback are one of the six organisational values that improves workplace safety. In a different work setting, Stave, Pousette, and Törner (2008) reported that safety communication could improve safety-related behaviours in the farming sector. Furthermore, in another study aimed at validating a safety climate measurement among 1,026 industrial sector workers, Lin, Tang, Miao, Wang, and Wang (2008) identified safety communication as a climate factor. Factor analysis revealed that seven different factors, including management support, organisational environment, risk judgment, safety awareness and competence, safety training, safety precautions, and safety training explained 70.5% of the variance.

In the construction industry, Ling, Liu, and Woo (2009) attempted to develop and evaluate 41 strategies intended for the reduction of accidents and fatalities. A key outcome of their study highlighted the need for improvements in communication among management and workers. The worker's role was also noted in the performance of all safety management systems (Hon, Chan, & Chan, 2011). In a study among 235 union construction workers, Cigularov et al. (2010) and Hofmann et al. (2017) concentrated on the essential contribution of positive safety communication to the improvement of workplace safety performance.

In exploring the antecedents and influences of safety climate in 131 OHSAS documented organisations in Spain, Fernández-Muñiz et al. (2012) showed that communication has an impact on safety performance and other safety behaviour outcomes in the form of employee satisfaction and firm competitiveness. In a modern study by Huang et al. (2018) on the effect of supervisor safety communication and safety climate on the safety performance of long-haul truckers, they noticed that safety communication is one factor that strongly determines safety performance. Other studies conducted in this regard were by Wold and Laumann (2015), and Yeung and Chan (2012).

Consequently, it is essential to reiterate that this dimension of SMPs was selected in the present study due to its ability to help explain safety performance outcomes. Literature shows a lack of safety research studies that have examined this variable in the Jordanian work setting, particularly in the context of nursing (Ashour & Hassan, 2019). This is another theoretical and empirical gap that this study intends to fill.

2.4.4 Safety Rules and Procedures

Another SMP is safety rules and procedures that are capable of influencing safety performance outcomes across industries. Duty of care legislation has stipulated that employers should maintain safe work environments to the extent that hazards are as low as reasonably practicable (Hopkins, 2007). Lu and Yang (2011) defined safety rules and procedures as the extent to which organisations create clear missions, assign clear roles and responsibilities, set up standards for monitoring employee behaviours and also institute systems for correcting workers' unsafe behaviours. Vinodkumar and Bhasi (2010) are, however, of the opinion that the functionality of safety rules and procedures in organisations rests on the shoulders of the management who must see to the implementation of rules and procedures that are established rather than allowing them to reside on paper only.

Some have suggested that the implementation of safety procedures and rules by the management of organisations is a demonstration of their level of commitment in ensuring workplace safety (Fernández-Muñiz et al., 2007). Hence, behaviours that are acceptable and how these behaviours affect safety outcomes in organisations is a functíon of the effectiveness of the organisation's safety rules and procedures.

Some studies on the ability of safety rules and procedures in influencing safety performance outcomes will now be discussed. In a study of 155 employees of a passenger ferry company in Taiwan, Lu and Yang (2010) examined safety climate and safety behaviour. Confirmatory factor analysis identified five main dimensions of safety climate, including safety policy, safety motivation, emergency preparedness, safety training, and safety communication. Safety training and emergency preparedness were found to positively affect self-reported safety behaviours with respect to safety compliance and safety participation. The study also revealed positive associations among respondents' age, ferry capacity, and safety compliance.

Others have found similar results. For example, Leggat, Bartram, and Stanton (2011) used a mixed-method research technique and found that high performing works systems were a result of the implementation of safety rules and procedures. In the petroleum industry setting, Dahl (2013) noted the importance of workers' knowledge of rules and procedures and how such knowledge affected their safety-related behaviours. In a survey of 651 elderly homes, Yeung and Chan (2012) took note of the importance that should be attached to the safety rules and procedures implementation.

Others have studied adherence to safety rules and procedures. Wu et al. (2015) used a Prospective Safety Performance Evaluation (PSPE) on construction sites with 450 respondents. Using SEM modeling, they found adherence to safety rules and procedures as a significant factor for improving safety performance indicators. Fang, Wu and Wu (2015) argued that obeying safety rules and procedures was a key to improving safety performance indicators in the construction industry. Other related studies have also examined safety rules and procedures with its ability to influence safety performance outcomes (Vinodkumar & Bhasi, 2010; Wachter & Yorio, 2014; Feng et al., 2014).

2.4.5 Workers Involvement in Safety

Involving employees in the safety management process of organisations is critical to maintain safety in such organisations. Worker involvement is a behaviour-based technique that involves individuals or groups in an upward communication flow and decision-making process within an organisation (Fang, Wu, & Wu, 2015). However, the amount of participation depends on the connection and effects of the decisions to be made. This is because employees know better than anyone else where hazards exist, and their involvement in the safety management process of the organisation makes them committed to the cause (Goetsch, 2011). Also, the extent of involvement can range from not involving employees (where the supervisor makes all decisions), to complete involvement of employees (where the safety decision-making process is all involving).

In as much as workers have direct contacts with their places of work, they are the best-qualified persons to make suggestions for improvements (Awwad, El Souki, & Jabbour, 2016; Bragatto, Agnello, Ansaldi, & Pirone, 2015). In this context, workers can consult before making final decisions which directly or indirectly affect them (Fang, Wu, & Wu, 2015). From this perspective, workers are highly empowered with some level of responsibility and are made accountable for failures. This is also a way of ensuring that both workers and management are involved in safety-goal setting and making sure that those goals are accomplished. This type of decision making further leads to fostering team spirit and relieves managers from the planning, leadership and mentoring burden (Awwad et al., 2016).

While worker involvement is generally seen as important to the organisational safety management process, the nature of this involvement is also critical (Goetsch, 2011). Workers involved in the safety management process should go beyond looking after an individual's own health and safety so that the safety and health of other employees within the same organisation are considered. However, the approach to leadership within such organisations determines the level at which workers are either involved or may want to be involved in the safety management process. In light of this, Goetsch (2011) suggested that when employees are engaged in the design and implementation, monitoring and follow-up of the safety management process, this leads to ownership of the programs by workers, which will eventually lead to a reduction in accident and injury rates.

Some studies have been done that highlighted the importance of employees' involvement in safety as a core or related component of SMPs. Accordingly, Vinodkumar and Bhasi (2010) posited that worker involvement is a practice of management and is evaluated using items related to safety committees with representation from various strata of employees in the overall safety decision-making procedure. This also points to the impact of senior-level management commitment in safety-related matters and in ensuring safety in the workplace.

Similarly, Ford and Tetrick (2011) noted that involving workers in the safety management process was key to organisational safety performance. This involvement can be achieved through psychological empowerment through their involvement in safety committees.

In a study of the Iraqi oil and gas industry Iraq, Khdair et al. (2011) identified worker participation as one of the most critical SMPs that influence safety performance. They claimed that a direct gain drawn from involving workers from various organisational levels in safety-related issues is that they provide suggestions and feedback about internal and external improvements. Other studies have identified worker involvement in safety as a critical component of SMPs or in its ability to determine safety performance outcomes (Cooper, 2015; Ngueutsa, & Mbaye, 2015; Wu et al., 2015).

Therefore, it is essential to investigate the involvement of workers as SMPs in influencing safety performance. For this study, workers refer to all nurses attached to the Jordanian public hospitals. It is on this basis and in view of submissions by other researchers on the need for further studies using this variable that it has been selected in this study.

2.4.6 Safety Promotion Policies

Safety promotion policies is a motivating factor in influencing worker behaviour to perform safety-related behaviours based on incentives and rewards from the management. A program of this type reinforces accident reporting or any hazardous events that may cause an accident. Welander, Svanstrom, and Ekman (2004) defined safety promotion as a “process that aims to ensure the presence and maintenance of conditions that are necessary to reach and sustain an optimal level of safety.” They also noted that the mechanism requires a concerted effort by individuals, organisations, societies and nations to build an environment that ensures safety.

VinodKumar and Bhasi (2010) established policies on safety promotion that can be evaluated by the use of items related to tracking the safety conduct of employees and using them for promotional, reward and hazard reporting incentives, and for raising awareness among staff through the organisation of safety week programs and other related events. De Rademaeker, Suter, Pasman, and Fabiano, (2015) and Mashi, Subramaniamand, and Johari (2017) claimed that policies to promote safety are among the factors that can affect safety performance.

Owing to the above empirical underpinnings, and within the context of the present study, safety promotion policy is hereby selected as a variable to be examined in relation to safety performance. Also, from the review of the related literature on the variables of this study, one thing is evident. The use of this particular variable has been scarce in safety management literature. As such, examining this variable within the context of this study is apt. It would be an essential contribution to the body of knowledge in safety management, particularly within the context of nursing staff in Jordan.

2.4.7 Cooperation Facilitation

Cooperation facilitation as a component of SMPs is entirely novel in the safety research area. Wachter and Yorio (2014) in discussing this factor posit that safety may be seen as a personal or collective endeavour. This position was taken because of the interdependent nature of tasks in workplaces. They noted that where tasks are interdependent, the reliance of employees on each other in successfully executing safety tasks is necessary. As such, it has become critical for the management of organisations to consciously entrench the need to encourage information sharing among employees in the execution of their tasks in their safety programs.

Basically, according to Wachter and Yorio (2014), cooperation facilitation revolves around employees being motivated to cooperate with each other to resolve safety concerns. It also encourages formal mechanisms of communication between workers in terms of safety. It also involves ensuring communication of crucial safety information for both on-coming and off-going shift workers.

Employee perceptions at the level of seven selected SMPs introduced in their organisations are considered as organisational factors that can affect their performance in safety. Thus, the researcher highlighted the influence of seven core factors, i.e., the safety of management commitment, safety training, safety rules and procedures, safety communication and feedback, workers' involvement in safety, safety policies promotion, and cooperation facilitation as mentioned above as unidimensional and represented by practices of safety management on safety performance in this study.

2.5 WORK ENVIRONMENT

In this section, different perspectives on the definition of the working environment will be presented, and the reasons for choosing work environment for this study will be discussed. Also, this section offers a delineation of the work environment, further relationships with organisational factors such as SMPs, and safety performance. The measurements of the work environment based on empirical underpinnings are also presented in the next chapter.

2.5.1 Definition of Work Environment

Work environment denotes the physical, social, and psychological characteristics of a work setting (Dai et al., 2014; Searcy et al., 2016; Dul & Ceylan, 2015; Bergstram, Miller, & Horneij, 2015; Salin, 2015). Additionally, it is known that the work environment has to do with all aspects of the strategy and management of the work system and how the system interacts with employees and their places of work (Searcy et al., 2016). According to Disch (2002), a work environment can be defined as following "a work setting in which policies, procedures and systems are designed so that employees are able to meet organisational objectives and achieve personal satisfaction in their work" (p. 3).

Throughout this dissertation, the characteristics of the work environment was determined by six questionnaire items being affected by accidents described by Kouzes and Posner (1995), which is representative by assessing opportunities for personal and professional development, goals sharing, decisions making, feeling valued and flexibility to change how the nurses organise their duties at the workplace. Thus, the term "work environment" will be used to refer to the context of a healthcare organisation as "organisational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178).

According to some studies, work environment and performance are represented as multifactorial and complicated and can be studied from different perspectives (Bergström et al., 2015). Despite this, a number of researchers have reported the critical role played by the work environment in the workplace. For example, a stable work environment leads to greater job satisfaction (Atefi et al., 2014; Edem, Akpan, & Pepple, 2017), a strong sense of trust between management and employees (Shirey, 2006), improved quality of care, and lowers harm to patients in the healthcare setting (Newhouse et al., 2013). Nurses working in a promising work environment in China were noted to deliver safe care with low dissatisfaction or work burnout (You et al., 2013).

On the other hand, several factors are usually associated with a poor work environment, which leads to an increased number of accidents as well as a higher level of accident severity. Among these factors are safety climate and safety practices (Li et al., 2017). Hence, the need exists for the management of organisations to be responsible for ensuring stable work environments so that their employees can work safely (Zúñiga et al., 2015; Porter et al., 2016; Dai et al., 2014; Nguyen et al., 2015).

2.5.2 Safety Management Practices as the Antecedent of Work Environment

While earlier sections of this chapter discussed a number of individual and organisational factors and their ability to influence safety performance outcomes, SMPs, being the core of this research, will now be discussed. SMPs have been defined by some researchers in the safety management research area. For example, Kirwan (1998) claims safety management as practices and roles associated with employees and organisational safety. Organisational safety is a function of the prevailing safety management system overall and a more extensive organisational management process. Gershon et al. (2000) defined SMPs as practical rules and procedures set up by the administrators of organisations to avoid the occurrence of the workplace and work-related injuries and accidents.

In the literature, the association between SMPs and safety performance is established and has been so empirically proven in a myriad of studies across numerous work settings and socio-demographic milieu (Choudhry, 2014; Vinodkumar & Bhasi, 2010; Wachter & Yorio, 2014; Wold & Laumann, 2015). However, of importance to the researcher is to identify which are the most critical organisational factors impacting the level or strength of the work environment (Solís-Carcaño & Franco-Poot, 2014) and how this relationship can lead to better safety performance indicators.

According to some studies, SMPs are becoming a critical key to the improvement of the work environment (Hohnen & Hasle, 2018; Torp & Moen, 2006). For instance, safety management is represented as an essential part of the construction management of building engineering in China, which has a good work environment (Lu, Li, Zhou, & Deng, 2015). Additionally, the practice of safety management is selected as an antecedent of the work environment because it is theory-driven. When nurses perceive great SMPs occasioned by the activities of management in relation to the safety of the nurses, then the nurses will develop positive perceptions of the comfortability and user-friendly nature of their work environment. This should, in turn, lead them to ensure improvements in their safety performance indicators. Interestingly, in the safety research area, this argument has been proven (Zohar et al., 2014; Johari et al., 2017; Reader, Mearns, Lopes, & Kuha, 2017).

Interestingly, no consensus exists as to how SMPs influence safety performance, especially among employees in highly regulated work settings (Mashi, 2014). Consequently, while it is well-established that different SMPs influence safety performance (Nordlof et al., 2017; Jaafar et al., 2017; Vinodkumar & Bhasi, 2010), very little has been done in terms of theoretical development and research that explicitly explain the fundamental mechanisms on how SMPs affect safety performance differentially (Cheng et al., 2012). Additionally, environmental and safety management concepts have rarely been examined in a single study (Hajmohammad & Vachon, 2014). Thus, research gaps are created that this research intends to fill.

2.5.3 Work Environment as Mediator

The study of statistical mediation in psychology is popular because sociologists are concerned and like to see how things work (Hayes & Preacher, 2014; Montoya & Hayes, 2017). Even though the association between SMPs and safety performance is well-established and has been demonstrated in the literature review, Mathieu et al. (2007) and Wu and Zumbo (2008) noted that, for empirical relationships, the introduction of a mediator is justified (Baron & Kenny, 1986). Moreover, when researchers seek to gain an additional understanding of how and why such relationships occur, and especially in an intermediary process (Montoya & Hayes, 2017; Muller et al., 2005), the introduction of a mediator is worthwhile.

Furthermore, MacKinlanon (2012) suggested that the introduction of mediators in statistical relationships is to seek further clarification on the nature of the relationship between an independent and dependent variable. Because scholars are now directing their empirical endeavours on gaining a better understanding of established findings, Cohen, Cohen, West and Aiken (2013) suggested that the introduction of a mediator and its subsequent analyses are used to understand a well-known relationship.

As such, one of the key thrusts of this research is to understand the mediating role of the work environment in the association between SMPs and safety performance. Based on this, better SMPs should build the perceptions of nurses about the goodness of the characteristics of their work environment, which should naturally lead to improved safety performance indicators.

Clearly put, SMPs are organisational factors set in place by the management to positively shape the perceptions of employees that safety is being given adequate priority in the workplace. When employees actually feel the presence of this priority, they tend to have a sense of organisational commitment that their work environment is comfortable, flexible, fulfils their ambitions, and is user-friendly enough for them to carry out their tasks. Also, a positive perception may be developed among nurses that their work environment gives opportunities for professional development, share goals, support them, is well-placed for them to work safely. Subsequently, this should lead to compliance and participation in safety-related activities of their organisations. This is in addition to the fact that they will also tend to reduce risk-taking behaviours.

An enhanced work environment or perceptions of a good work environment lead to the betterment of a number of organisational performance indicators. For instance, a work environment is seen to have a powerful influence on organisational outcomes (Porter et al., 2016; Stalpers, de Brouwer, Kaljouw, & Schuurmans, 2015; Searcy et al., 2016; Zúñiga et al., 2015; Edem et al., 2017) and affects health and survival (Hemström, 2001; Johari et al., 2017). Nevertheless, an examination of the work environment as a mediator in explaining the association between SMPs and safety performance is unavailable to the knowledge of the researcher. This is a first look and an intended original contribution to the body of knowledge in the safety research area.

As some researchers have noted, a stable work environment leads to greater job satisfaction (Atefi et al., 2014; Ketterman., 2016; Edem et al., 2017), improved quality of care and reduces harm to patients in the healthcare setting (Newhouse et al., 2013). Nurses working in a promising work environment in China were found to deliver safe care with low dissatisfaction and work burnout (You et al., 2013). Several factors are usually associated with a poor work environment, which leads to an increased number of accidents as well as a higher level of accident severity (Johari, et al., 2017). Among these factors are safety climate and safety practices (Li et al., 2017). Thus, the management must be responsible to ensure stable work environments so that their employees can work safely (Nguyen et al., 2015; Dai et al., 2014; Zúñiga et al., 2015; Porter et al., 2016).

A work environment is a key to understand the safety outcomes at the workplace among employees (Johari et al., 2017) and effects on health and survival (Hemström, 2001; Longoni, Pagell, Johnston, & Veltri, 2013). As noted in the literature review, the relation among safety performance and work environment has been investigated in a survey of 419 manufacturing companies' worker in Klang Valley. Johari et al. (2017) reported that the work environment had a significant influence on the unsafe behaviour of employees. Kwon and Kim (2013) demonstrated a significant and positive association between work environment and both components of safety performance, such as safety compliance and safety participation.

These findings confirm that a challenging work environment leads to more frequent and severe occupational accidents. This shows that the work environment has a profound impact on various safety outcomes in different work contexts (Johari et al., 2017).

This study examines the work environment based on organisational characteristics inherent in healthcare facilities that should enhance safety performance outcomes among nurses. Thus, the rationale for exploring the work environment as a mediator in the present study is noted. The work environment is a principal determinant of organisational outcomes, and organisational factors impact the characteristics of the work environment. Consequently, SMPs (an organisationally-induced factor) should affect work environments, which should, in turn, affect the safety performance indicators of employees.

Relative to the context of this study, SMPs have been demonstrated to influence safety performance and the work environment, and these are noted to be a function of a number of factors. Moreover, the work environment is also capable of influencing a number of organisational outcomes.

Therefore, the researcher posits that SMPs will positively shape the perceptions of nurses in the Jordanian healthcare setting regarding the worthiness of their work environment. This, in turn, should improve their level of safety compliance, safety participation, and reduce their risk-taking behaviours. Interestingly, to the knowledge of the researcher, this is a first attempt of examining the work environment within safety management and its outcomes.

In discussing the association between the variables of the present study, it is essential to point out the following. Numerous studies in the safety research area have noted the importance of SMPs as a critical antecedent of safety performance. However, little has been empirically done on how this relationship occurs with cooperation facilitation as a core component of SMPs.

To the knowledge of the researcher, the work environment of nurses has not been examined in the safety management research area and especially among nurses in the Jordanian healthcare setting. The literature suggests an over-dependence on safety compliance and safety participation as the core components of safety performance. A paucity exists in terms of explaining safety performance from the point of view of risky behaviour.

2.6 UNDERPINNING THEORY

2.6.1 Social Exchange Theory (SET)

The social exchange theory (SET) is among the most influential conceptual patterns used in recognising workplace behaviour (Cropanzano & Mitchell, 2005). The central tenet of the SET involves a series of interdependent interactions, contingent on the actions of the other partner in the social relationship, and generate obligations (Blau, 1964; Cropanzano & Mitchell, 2005) wherein any interaction between individuals is an exchange of resources (Homans 1958, p. 597). Moreover, the resources exchanged maybe not only tangible, such as goods or money, but also intangible, such as social amenities or friendship (Lambe, Wittmann, & Spekman, 2008).

The social exchange may be described according to Blau (1964) as "voluntary actions of individuals that are motivated by the returns that they are expected to bring and are expected to bring from others" (p. 19). SET is founded upon the reciprocity principle, as suggested by Gouldner (1960). Further, it was expanded in the social sciences by Blau (1964), where the SET is used to describe how a person goes into relationships that are not necessarily economical but related to social obligations. The theory asserts that people assess potential social relationship benefits and costs, ultimately seeking to maximise benefits and minimise costs. Costs refer not only to exchanges in economic terms, but also to social transactions (Blau, 1964; Emerson, 1976).

Furthermore, while reciprocity is mostly experienced between individuals, it may also be developed between individuals and the organisations they work for (Rosseau, 1989; Shore, Sy, & Strauss, 2006). The SET further emphasises that in situations where somebody fails to fulfill an obligation or unjustly treats another due to creating negative reciprocity, it can be posited that workers can react to unfair work conditions by partaking in behaviours that can cause harm to co-workers and by extension the work environment.

The concept of unspecified obligations is central to both the SET and the norm of reciprocity. Unspecified obligations are associated with the behaviour of humans, such that when one person does a favour for another person, the expectation is that some form of future return will come from the party to whom the favour was given. Such obligations may occur in organisationally acceptable behaviours, which should result in a perceived balance in the exchange relationship (Blau, 1964; Gouldner, 1960;

Rousseau, 1989). An improvement in safety performance, which is indicative of safety behaviours, is a typical illustration of the application of the SET.

The explanatory value of SET has been recognised in a diverse field of studies such as leadership (Liden, Sparrowe & Wayne, 1997), business (Lambe et al., 2008), networks (Cook, Molm & Yamagishi, 1993), social justice (Konovsky, 2000), and relationships between practices of human resource and the mindset of employees (Meyer, Stanley, Herscovitch & Topolnytsky, 2002; Snape & Redman, 2010; Al-hawary & Banat, 2017) among others.

SET is suitable to use for this study as an underpinning theory because management practices are services provided by the hospitals to healthcare workers. Hence, a mutual interaction between the healthcare workers and the hospitals is postulated. In other words, healthcare workers are expected to return high safety performance to their hospitals, which implies that they are expected to comply with safety behaviour, participate in safety activities, and prevent any actions that may result in risky behaviour.

Whether the management provides adequate training or good opportunities for healthcare workers, healthcare workers would, therefore, perform their duties efficiently and safely, resulting in improved safety performance. Safety management commitment and their concern to enhance workplace safety result in healthcare workers complying with safety rules and procedures, partake in meetings voluntarily, and collaborate with co-employees on hospital safety-related matters.

Relating to the above argument, this current study anticipates that when nurses perceive high SMPs occasioned by the activities of management regarding their safety, they will develop positive perceptions of the comfort and user-friendly nature of their work environment. This should, in turn, lead to improvements in their safety performance indicators. Notably, various empirical studies on safety performance have used SET in an effort to understand how the social exchange process aids in shaping employee safety-related perceptions and behaviour (e.g., Mearns & Reader, 2008; Cooper & Phillip, 2004; Johari et al., 2017; Mullen et al., 2017; Zohar et al., 2014; Yorio, Willmer, & Moore, 2015; Zhou & Jiang, 2015; Zhang & Li, 2015; Newman, Donohue, & Eva, 2017).

2.7 THEORETICAL FRAMEWORK

A theoretical framework, as per Sekaran and Bougie (2016), is a conceptual model of the associations of several factors which have been recognised as vital to the research problem area. This study will be conducted to investigate the role of work environment in the relationship between SMPs, which is to be examined as a higher-order construct comprising of management commitment to safety, workers involvement in safety, safety promotion policies, safe work procedures, safety training, safety communication and feedback, and cooperation facilitation which serve as the independent variable to the component of safety performance, namely safety participation, safety compliance and risky behaviours as the dependent variable.

Based on the premise noted above, testable hypotheses are then developed and eventually tested to confirm certain relationships for a better understanding of occurrences or phenomena (Zikmund et al., 2013).

Based on the SET, some form of reciprocal interchanges occur between employees and their organisations based on the influence of unspecified obligations. As such, one of the key thrusts of this research is to understand the mediating role of the work environment in the relationship between SMPs and safety performance. In essence, better SMPs should build the perceptions of nurses about the goodness of the characteristics of their work environment, which should naturally lead to improved safety performance indicators, as shown in Figure 2.3 below.

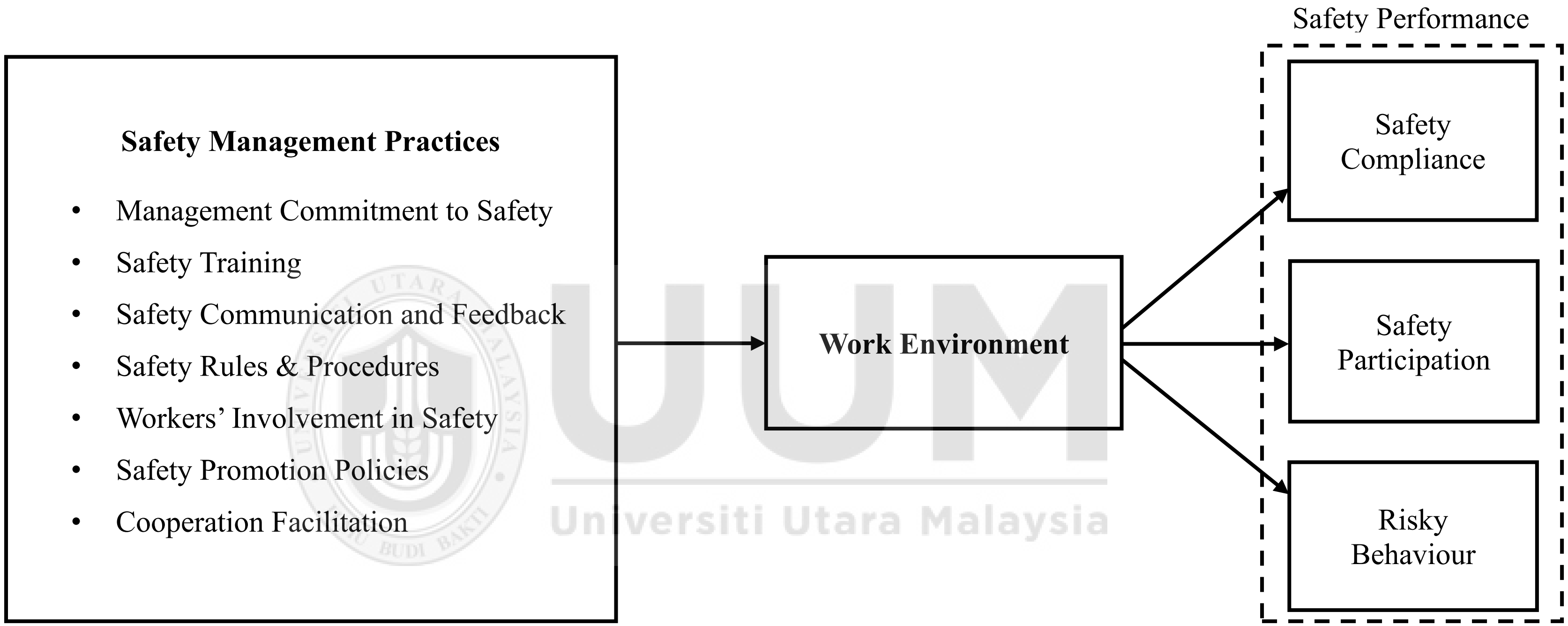


Figure 2.3
Conceptual Framework

The development of a theoretical research framework helps to explain the various networks between research variables (Sekaran & Bougie, 2014). Examples of the research structure are given in Figure 2.4. This helps to identify the relationships between the research variables and provides the direction and purpose of the study. Figure 2.4 provides an overview of the study variables in greater detail. The first independent variable is SMPs. The safety performance components are the dependent variable for this research; meanwhile, the working climate is this research's mediating variable.

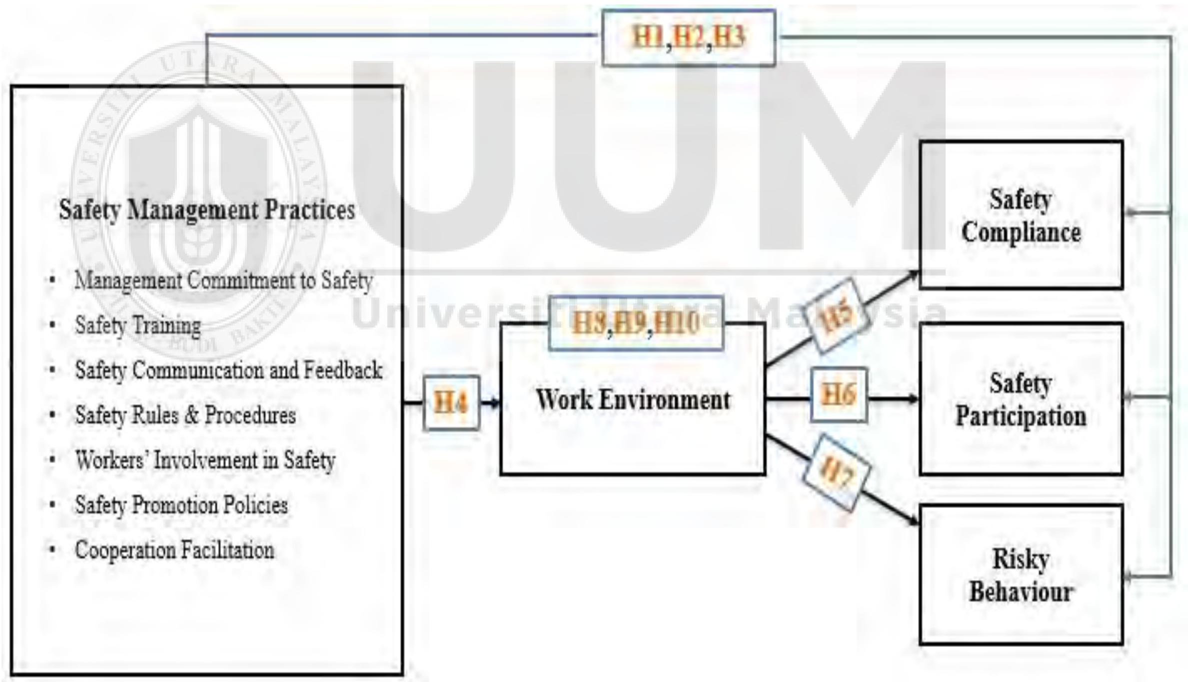


Figure 2.4
Path Diagram of Hypotheses

Specifically, the hypotheses H1, H2, and H3 in Figure 3.2 represent the hypothesised relationships between SMPs and components of safety performance (safety compliance, safety participation, and risky behaviour). Hypothesis H4 represents the hypothesised relationship between SMPs and the work environment. On the other hand, hypotheses H5, H6, and H7 represent the hypothesised relationship between work environment and components of safety performance. At the same time, the mediating variable of this study is the work environment and describes the hypothesised relationships by hypotheses H8, H9 and H10.

The mediating role of the work environment on SMPs and safety performance relationships can be explained from many perspectives. Thus, the main underpinning theory used to describe the above theoretical framework is SET.

2.8 STATEMENTS OF THE HYPOTHESES

The core objective of this study is to explain the mediating role of the characters' work environment in the association between SMPs and safety performance. Empirical underpinnings presented in Chapter Two points to the fact that the relation among SMPs and safety performance, as well as the relationship between work environment and safety performance, are well-established across a myriad of work settings and socio-demographic settings.

It has been theoretically and practically established that SMPs are directly and indirectly related to safety performance. This has been established in research done in numerous socio-demographic settings (Agbede et al., 2016; Chen & Chen, 2014; Cheng et al.,2012; Nordlöf, Wiitavaara, Högberg, & Westerling, 2017; Wachter & Yorio, 2014; Vinedkumar & Bhasi, 2010) and especially in the healthcare context (Guzman et al., 2015; Wand, Isobel, & Derrick, 2015). It established that several factors have either mediated and/or moderated the above relationships with the hope of better explaining such relationships. For example, these include safety motivation and safety knowledge (Vinodkumar & Bhasi, 2010), safety motivation (Chen & Chen, 2014), and leadership (Mullen et al., 2017; Sheehan, Donohue, Shea, Cooper, & De Cieri, 2016).

On another note, while it is known that SMPs have a significant impact on safety performance among all kinds of employees, more needs to be done with regards to theory and practice, especially in identifying the most critical factors that better explain this relationship in the healthcare setting. Generally, findings from the above studies suggest that SMPs can elicit high safety performance outcomes in the form of safety performance (safety compliance, safety participation, and risky behaviours). The selected practices for safety management in the current research are the safety promotion policies, workers' involvement in safety, management commitment to safety, safe work procedures, safety communication and feedback, safety training, and cooperation facilitation. These practices are chosen because of their distinct characteristics, which were explained in the previous chapter.

A work environment is a key to understanding the safety outcomes at the workplace among employees (Johari et al., 2017) and effects on health and survival (Hemström, 2001; Longoni et al., 2013). As mentioned in the literature review, the relationship between the safety performance component and work environment has been investigated in a study of 419 employees in manufacturing companies in Klang Valley, Johari et al. (2017) reported that the work environment had a significant influence on employees' unsafe behaviour.

Kwon and Kim (2013) demonstrated a significant and positive association between work environment and both components of safety performance, such as safety compliance and safety participation. These findings confirm that a challenging work environment leads to more frequent and severe occupational accidents. This shows that the work environment has a profound impact on various safety outcomes in different work contexts (Johari et al., 2017).

Whereas SMPs is identified as a critical factor that can explain safety performance, the role of the work environment in determining safety performance is also noted. Nevertheless, the thrust of the current research is to understand and further explain the relationship between SMPs and safety performance with the work environment as a mediator. While it has been conceptually noted that SMPs is a foremost antecedent of the work environment (Hohnen & Hasle, 2018; Torp & Moen, 2006; Lu et al., 2015), only a few empirical endeavours have been done in this regard (Hajmohammad & Vachon, 2014).

However, in this study, the work environment will be investigated based on organisational characteristics that are inherent in healthcare facilities, which should boost safety performance outcomes among the nurses. Consequently, the rationale for proposing an examination of the work environment as a mediator in the present study is noted.

The argument is that the work environment is a crucial determinant of organisational outcomes, and organisational factors influence the characteristics of the work environment. Therefore, SMPs, which are organisationally-induced factors, should affect work environments that, in turn, should affect the safety performance indicators of employees.

In applying the above position to the context of this study, it has been proven that SMPs influence safety performance and the work environment is noted to be a function of several factors. More so, the work environment is also capable of influencing several organisational outcomes. Therefore, the researcher posits that SMPs will positively shape the perceptions of nurses in the Jordanian healthcare setting about the worthiness of their working environment. This, in turn, should improve their level of safety participation, safety compliance, and reduce their risk-taking behaviours.

Based on the discussion above, the following hypotheses are posited in relation to the work environment in serving as a mediator in the association between SMPs and safety performance:

H1: A significant and positive relationship will exist between safety management practice and safety compliance.

H2: A significant and positive relationship will exist between safety management practice and safety participation.

H3: A significant and negative relationship will exist between safety management practice and risky behaviour.

H4: A significant and positive relationship will exist between safety management practice and work environment.

H5: A significant and positive relationship will exist between the work environment and safety compliance.

H6: A significant and positive relationship will exist between the work environment and safety participation.

H7: A significant and negative relationship will exist between the work environment and risky behaviour.

H8: The work environment will mediate the relationship between safety management practices and safety compliance.

H9: The work environment will mediate the relationship between safety management practices and safety participation.

H10: The work environment will mediate the relationship between safety management practices and risky behaviour.

2.9 CHAPTER SUMMARY

This chapter sought to explain this proposal by expounding upon the constructs that are to be empirically tested through the proposed model/research framework. Accordingly, a thorough literature review of the constructs selected for this study has been done, and various empirically-related conceptual, theoretical and practical gaps have been identified that the researcher intends to fill. Besides that, the underpinning theory used to support the development of the framework has also been presented. For all the constructs discussed, attendant hypotheses were developed. The next chapter presents the methodology that was utilised to conduct the study.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This section describes the methodology used for conducting the research. Therefore, this chapter presents an overview of the method employed to achieve the objectives of this research. These include the conceptual variables description, study design, population, sampling, data collection, variables and instrumentation measurement, and data analysis procedures.

3.2 CONCEPTUAL DEFINITIONS OF VARIABLES

The conceptual definitions of the variables are presented in the sub-sections below. Specifically, the independent variable of the study is SMPs (seven dimensions); the dependent variable is safety performance, and the work environment is the mediating variable.

3.2.1 Dependent Variable

Safety performance concerns the behaviours that employees show in complying with the safety and health guidelines in their workplace (Lievens & Vlerick, 2013). Safety performance is a measure of the level of occupational accidents that may result in bodily injury and/or property or environmental damages (Zohar, 2014). It is also utilised to "refer to the level of safety in an organisation" (Saat, Subramaniam, & Shamsudin, 2016, p. 144).

In this study, the safety performance of healthcare workers were assessed based on the definition by Martínez-Córcoles and Stephanou (2017), which comprises safety participation, safety compliance, and risky behaviours. Characteristically, safety compliance indicates obedience to safety rules and procedures formed by an organisation and/or related regulatory authorities (Griffin & Neal, 2000). For example, employees who comply with proper work procedures, follow safety rules and wear appropriate personal protective tools (Griffin & Neal, 2000).

Safety participation encompasses extra-role behaviours that indirectly contribute to improved safety in the work environment. For example, these include voicing concerns about safety (Mullen, Kelloway, & Teed, 2017; Tucker & Turner, 2015), aiding co-workers with safety problems, promoting safety programs and policies, attending safety meetings (Neal et al., 2000), and performing voluntary behaviours among employees (Subramaniam, Shamsudin, et al., 2016). Finally, risky behaviours refer to behaviours that may expose people to harm or weighty risks of harm that may prevent them from attaining safety and related organisational and personal goals (Richmond, 2014). Relatedly, risky behaviours are acts that increase the probability of an accident (Martínez-Córcoles & Stephanou, 2017).

3.2.2 Independent Variables

SMPs are seen as safety policies, practices, and procedures for achieving a safe working environment (Vinodkumar & Bhasi, 2010; Wachter & Yorio, 2014), tangible safety practices, accountability and performance (Jaafar et al., 2017; Mearns, Whitaker, & Flin, 2003), and the overall management function as it relates to the safety of employees and the workplace (Harms-Ringdahl, 2004; Jaafar et al., 2017). It is mostly agreed that these practices improve safety performance (Dorji & Hadikusumo, 2006; Jaafar et al., 2017; Mearns et al., 2003; Vinodkumar & Bhasi, 2010; Jaafar et al., 2017; Wachter & Yorio, 2014; Vinodkumar & Bhasi, 2010b; Mearns et al., 2003).

The seven factors of SMPs in this study were chosen from Wachter and Yorio (2014) and Vinodkumar and Bhasi, (2010). The practices are:

1. Management commitment to safety which refers to the "the extent to which management is perceived to place a high priority on safety and acts upon that priority in an effective manner" (Smith & DeJoy, 2014, p. 50).
2. Safety training refers to safety-related training conducted in a manner that is expected to enhance safety-related knowledge and skill acquisition of employees that either directly or indirectly contributes to a reduction in the accident rate and an increase in safety (Bena et al., 2009).
3. Worker involvement refers to behaviourally oriented techniques that include individuals or groups in the upward flow of communication and safety decision-making processes within an organisation (Vinodkumar & Bhasi, 2010).
4. Safety communication and feedback refers to mechanisms required to enhance mutual understanding among both employer and workers on the safety requirements and objectives of the organisation (Jaafar et al., 2017).
5. Safety rules and procedures, according to Lu and Yang (2011), refers to the extent to which organisations create clear missions, assign clear roles and responsibilities, set up standards for monitoring employee behaviours and institute systems for correcting workers' unsafe behaviours.

6. Safety promotion policies refer to the organisation’s strategies set up to encourage reporting hazards and create awareness among employees (Vinodkumar Bhasi, 2010).
7. Cooperation facilitation refers to employees being motivated to cooperate with each other to resolve safety concerns. It also encourages formal mechanisms of communication between workers in terms of safety. It also involves ensuring communication of crucial safety information for both on-coming and off-going shift workers. (Yorio & Wachter, 2014).

3.2.3 Mediating Variable

The work environment comprises the social, physical, and psychological characteristics of the work setting (Chan & Huak, 2004). Besides, the working environment is connected to all areas of the work system strategy and management and how it interacts with employees and their workplaces (Searcy et al., 2016). In the healthcare setting, the work environment is defined as “the organisational characteristics of a work setting that facilitate or constrain professional nursing practice” (Lake, 2002, p. 178).

3.3 RESEARCH DESIGN

The research design shows the process by which an empirical investigation is to be undertaken. A research design is a master plan that specifies the methods and procedures to be used to collect and analyse data gathered from respondents (Zikmund et al., 2013). The primary aim of this research is to explore the relationship between SMPs, work environment, and safety performance with the intent of suggesting the essential SMPs capable of improving safety performance indicators among nurses in the healthcare setting in Jordan. Consequently, the sub-sections that follow demonstrate the intention of the study, the research nature, and the analysis unit.

3.3.1 Purpose of Research

The two primary research methods include quantitative and qualitative methodologies (Sekaran & Bougie, 2016). Descriptive research is conducted to explain a phenomenon strictly using narrative descriptions, cataloging, or measuring relationships. In other words, descriptive research depicts an accurate profile of events, organisations, or situations (Saunders, Lewis, & Thornhill, 2016; Sekaran & Bougie, 2016). According to Sekaran and Bougie (2016), researchers undertake an empirical investigation based on exploratory, descriptive, and/or hypothesis-testing purposes. Finally, hypothesis testing is associated with the gathering and use of quantitative data (Sekaran & Bougie, 2016). It enables researchers to uncover and to infer causal relationships among variables (Sekaran & Bougie, 2016).

Exploratory research is typically conducted when a specific phenomenon is not well understood. As such, existing research outcomes are either unclear or suffer from grave limitations; the topic is extremely complex, and not enough theory is available to guide the development of a theoretical framework (Sekaran & Bougie, 2016). This approach always uses qualitative methods.

This study is quantitative in nature because it examines the effects of SMPs and the work environment on nursing safety performance in Jordan. This study describes the characteristics of group employees and the work environment in delivering services. Thus, the purpose of the research is to describe the association among the variables as

Sekaran and Bougie (2016) stated and test the hypotheses created based on previously established research questions and objectives.

3.3.2 Nature of the Study

The use of a quantitative method is deemed acceptable for achieving the objectives of this research. Quantitative research is an objective and systematic operation that defines the expected relationship among variables and discusses them (Creswell, 2012). The quantitative approach to data analysis is useful for a researcher who aims to derive meaningful conclusions from the data collected. Besides, the method offers a description of the results experiment with statistical values, which can give a high degree of confidence (Saunders et al., 2016; Zikmund et al., 2013).

In addition, in quantitative research, the researcher distinguishes a research problem based on trends in a field or on the need to clarify why something happens. Describing a pattern means that a study seeks to establish the overall tendency of responses from individuals and to note how this tendency varies among people which can best answer the research problem.

Accordingly, this current research has sufficient justification for using a quantitative method. This research is quantitative because it examines the connection between SMPs, work environment, and nursing safety performance. Additionally, data in this study are cross-sectional, as they are gathered just once over the study period to answer the research questions (Sekaran & Bougie, 2016).

3.3.3 Unit of Analysis

A unit of analysis connotes the level of the aggregation of the data gathered during the data analysis stage (Sekaran & Bougie, 2016). Based on the problem statement, the unit of analysis is usually classified as individuals, dyads, groups, organisations, or cultures. For example, if the problem statement focuses on the individual as a data source, then the unit of analysis is an individual. If the problem statement concerns assessing the response or practices of two people, then the unit of analysis is called a dyad. Finally, when the research problem involves assessing group effectiveness, then the unit of analysis is a group (Sekaran & Bougie, 2016; Zikmund et al., 2013).

In this study, the analysis unit is the individual because the data were collected from individual nurses. Finally, the data required for this study were harvested only once. As such, this type of study is called a cross-sectional study. Table 3.1 provides a summary of the research design of the study.

Table 3. 1
Summary of the Research Design of the Study

Research Design	Type
Purpose of the study	Descriptive
Study setting and type of investigation	Field study
Time horizon	Cross-sectional
Unit of analysis	Individual nurse

3.4 POPULATION, SAMPLE, AND SAMPLING TECHNIQUE

Experimental designs and surveys are valuable and influential in discovering answers to research questions by gathering data for subsequent analysis. Still, a cause does more harm than good if a population is targeted incorrectly (Sekaran & Bougie, 2016). Thus, if data are not gathered from individuals, events, or things that can deliver the correct answers to solve the articulated problems, then the search will be pointless. The procedure for choosing the most suitable individuals, objects, or events as representatives of the entire population is known as sampling. A sample is a subgroup of a target population that the researcher plans to study for making generalisations about the whole target population (Creswell, 2012; Sekaran & Bougie, 2016).

3.4.1 Population of the Study

The population of a study refers to an entire group of people, events, or phenomena that a researcher desires to examine (Sekaran & Bougie, 2016). Zikmund et al. (2013) noted that the population of a study is "any complete group of entities that share the same common set of characteristics" (p. 387). Hence, this current research intends to examine factors that are capable of improving safety performance indicators among nurses in public hospitals under the Ministry of Health.

These public hospitals provide secondary and tertiary healthcare services. A statistic provided by the Jordanian Ministry of Health (2016) shows that the secondary and tertiary health system in Jordan comprises 110 total hospitals categorised into the public and private health sectors. The public health sector includes 32 hospitals under the control of the Ministry of Health (MOH). University hospitals such as the Jordan University Hospital (JUH), King Abdullah University Hospital (KAH), and 14 related hospitals are under the control of the Royal Medical Services (RMS). Lastly, there are 62 private hospitals. Table 3.2 shows the healthcare sectors in Jordan and the total number of beds for each sector in 2016.

Table 3. 2
Types of Hospitals, Number of Hospitals, and Beds in the Jordanian Health Sector (2016)

Health Sectors	No. of Hospitals	No. of Beds
Public health sector:	**48**	**9235**
Ministry of Health	32	5177
Royal Medical Services	14	2917
Jordan University Hospital & King Abdullah University Hospital	2	1141
Private health sector:	**62**	**4496**
Total	110	13731

Source: Jordanian Ministry of Health (JMoH) (2016).

Because this study examines safety performance in the healthcare setting, it would be suitable to consider healthcare workers because they are exposed to various occupational hazards in hospitals that are related to their job (Chalya et al., 2015). In this study, based on the categorisation in Table 3.2, registered nurses working under the Ministry of Health (MOH) in 32 hospitals were included in the population.

These nurses must meet the following criteria: they should have at minimum of a bachelor's degree, have their practicing license issued by the Nursing Council of Jordan, and must be a full-time employee at one of the country's public hospitals (Algol, 2016). According to the statistics provided by JMoH (2016), the total number of registered nurses employed in Jordanian hospitals in the public sector was 4,730 in 2016. Table 3.3 displays the number of registered nurses for each category in the public sector.

Table 3.3
Number of Registered Nurses in Each Category of the hospitals in the Public Sector

Public sector categories	**No. of registered nurses**
Ministry of Health	4730
Royal Medical Services	3810
University Hospitals	1248
Total	9788

Source: Jordanian Ministry of Health (JMoH) (2016)

3.4.2 Sample Size

A sample belongs to a larger population (Zikmand et al., 2013). It is a set of elements selected from the general population to be used for a survey (Salant & Dillman, 1994). Sampling is a procedure that is used to describe the selection of an appropriate number of elements from a specific population frame so that the characteristics of the properties of the sample can be used to generalise what should be obtainable for the whole population (Sekaran, 2016).

A researcher typically puts mechanisms in place to reduce sampling errors. Researchers must ensure that optimal samples are selected to avoid sampling errors because too small a sample is not right to the entire population (Pallant, 2007; Salkind, 2006). Statistically, when samples are too small, they may cause type II errors, which will probably lead to wrongly rejecting certain findings that should usually be accepted (Sekaran & Bougie, 2016).

In fact, nurses are exposed to risk. They are responsible for most blood specimens and other intravenous procedures in the hospital, and nurses are likely to handle sharp devices and have more direct contact with patients. In addition to that, they are more diligent in their reporting behaviours (Chalya et al., 2015). The study sample comprises nurses to assess their level of safety through SMPs and the work environment. According to JMoH (2016), the total number of registered nurses who are working in hospitals under the JMoH is 4,730. Based on Krejcie and Morgan's (1970) table for sample size determination, the appropriate sample size is 357 registered nurses, assuming alpha levels of 0.05.

However, in addition to the Krejcie and Morgan method, many statistical procedures exist to decide on an appropriate sample size for a research study. These include the rule of thumb that Roscoe (1975) proposed, which is that in multiple regression analyses, the sample size ought to be ten times the number of constructs in the study. In the present research, there are eleven constructs, thus, the required sample size should be at least 110, according to this rule of thumb.

Moreover, using the free application G* Power 3.1.9.2 (Faul, Buchner, Erdf Buchner lder, & Láng, 2007) with a significance alpha level ($\alpha = 0.05$), effect size ($f^2 = 0.15$), desired statistical power (I-ß = 0.95), and a total of 11 predictors (i.e., seven independent variables [safety training, worker's involvement, communication and feedback, management commitment, safety promotion policies, rules and procedures, cooperation facilitation], a mediator [work environment] and three components of safety performance metrics), for multiple regression-based analysis, a sample of 178 is appropriate (See Figure 3.1).

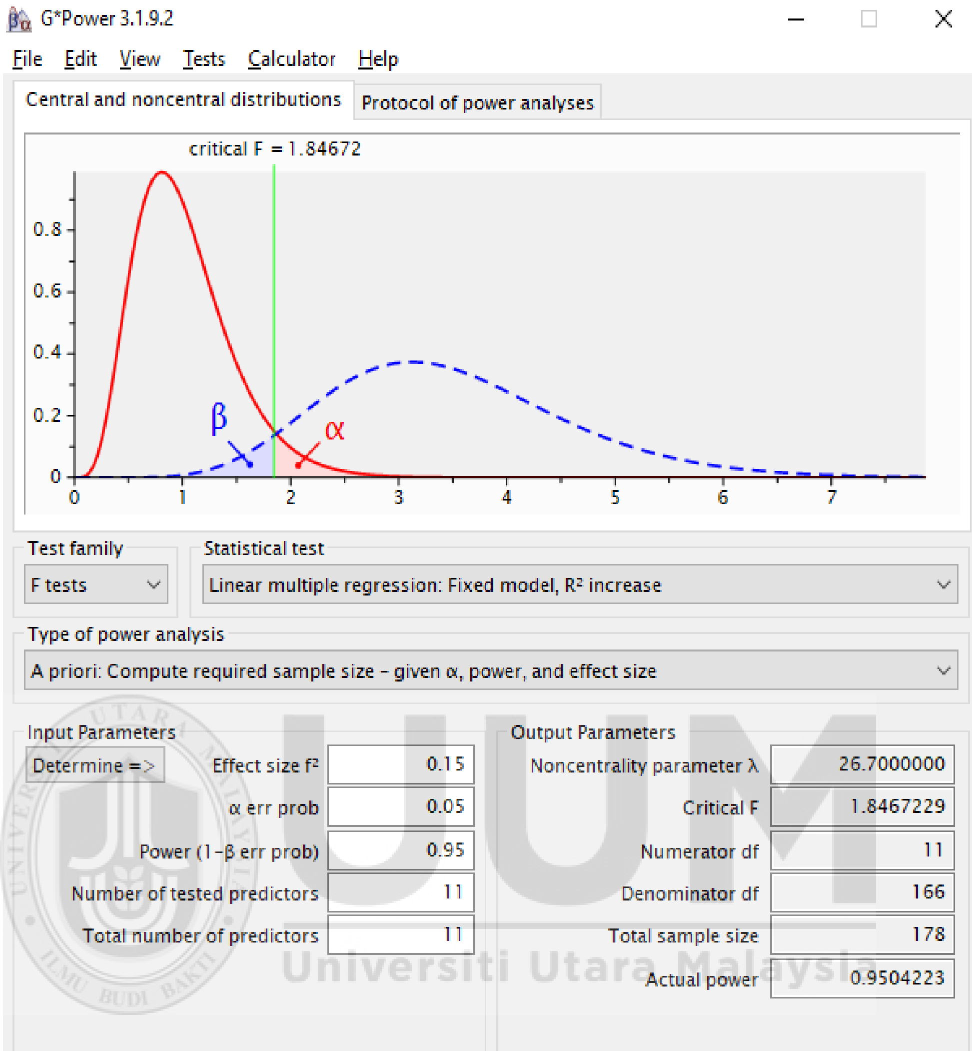


Figure3.1
*Sample Size using G*Power.*

The decided sample size in the survey was 357 nurses which is the minimum sample number based on the Krejcie and Morgan (1970) sample size determination table from a population of 4,730. Additionally, a sample size of 357 is in line with the rule of thumb of Roscoe (1975), in which a sample size of more than 30 and less than 500 is acceptable.

In the present study, eight JMoH hospitals were randomly selected: Abu-Obaidah, Al Yarmouk, AL-Ramtha, Princess Basma, Princess Badea', Princess Raya, Princess Rahma, and Mua'th Bin Jabal hospitals. The selection process for these four facilities is discussed in the following section.

3.4.3 Sampling Technique

The reason for using sampling techniques is to decrease cost and time (Zikmund et al., 2013). In general, the main alternative sampling designs are categorised into two types, which are probability techniques and non-probability techniques (Zikmund et al., 2013). Nonprobability procedures are defined by Zikmund et al. (2013) as sampling techniques in which units of the sample are selected based on personal judgment or convenience. According to Zikmund et al. (2013), use these techniques is not preferred because they lead to errors and other weaknesses in sampling.

Zikmund et al. (2013) defined the probability technique as “a sampling technique in which every member of the population has a known, nonzero probability of selection" (p. 395). In this technique, all elements in the population have an equal opportunity of being chosen as a subject in the sample. These techniques reduce the likelihood that the selection is made based on chance. This group of methods include simple random sampling, cluster sampling, stratified sampling, and systematic sampling (Zikmnud et al., 2013).

Simple random sampling is a process that ensures every individual has an equal opportunity of being included in the sample. Systematic random sampling involves selecting a starting point that utilises a random number generating process and then select every n^{th} numbered sample of the population list. Stratified sampling refers to a procedure in which each subgroup (stratum) of the population draws a number of sampling units. Based on the previous discussion to utilise simple, systematic, or stratified sampling, the researcher would need to acquire a list of all registered nurses working at the (MOH) in Jordan. This was not possible, thus, these methods were not applied to this study.

The last probability sampling technique is the cluster sampling technique. This technique involves classifying the total population into groups called clusters. After that, the researcher selects the required number of clusters randomly (Zikmund et al., 2013). In this study, the researcher utilised a single-stage cluster sampling technique. This technique is suitable when it is either impossible or impractical to get a list of all population elements. Also, this technique is convenient for a large population that is spread over a large geographical area (Shimizu, 1998).

In the present study, the clusters considered were provinces of Jordan (Amman, Zarqa, Irbid, Mafraq, Balqa, Ajloun, Madaba, Jerash, Karak, Ma'an, Aqaba, and Tafilah). As seen in Figure 3.2, Jordanian nurses across the provinces or the hospitals are similar in terms of backgrounds, duties, etc. Thus, the single-stage cluster sampling was an appropriate sampling technique to achieve the research objectives. Similarly, this technique was used because a list of all registered nurses employed in the JMoH hospitals was challenging to obtain. The registered nurses were already grouped according to their provinces and hospitals.

Figure 3.2
Distribution of Nurses across Jordan.
Source: Jordanian Ministry of Interior, 2018

Single cluster sampling is an extension of cluster sampling. According to Gay and Diehl (1992), the homogeneity of the subjects across the clusters is the main prerequisite to utilise cluster sampling, which allows the selected clusters to represent all populations. Also, they mentioned that the subjects in the clusters may share similar characteristics with each other (i.e., backgrounds, attitudes, and behaviour). Thus, Gay and Diehl (1992) proposed seven steps to actualise the area sampling process. Table 3.4 summarises the cluster selection process.

Table 3. 4
Cluster Sampling Technique Steps

Step no.	Steps of cluster sampling	Procedure
1	Identify the population	The population of this study is all registered nurses in the JMoH. The population size is 4,730 registered nurses.
2	Identify the sample size	The sample size of this study is 357 registered nurses.
3	Define a logical cluster	The logical cluster was the 12 provinces, i.e., the Capital (Amman), Irbid, Zarqa, Balqa, Mafraq, Jerash, Ajloun, Madaba, Karak, Tafilah, Ma'an, and Aqaba and the hospitals of the Ministry of Health found in 10 provinces (clusters), after excluding two regions (Aqaba and Tafilah).
4	Estimate the average number of population elements for each cluster	Divide the total number of the study population (i.e., 4,730 registered nurses) by the number of study clusters, which are ten clusters. The result was 473 registered nurses.
5	Determine the number of clusters which needed to represent the population	Divide the sample size (357 registered nurses) by the average population in each cluster (i.e., 473 registered nurses), which resulted in 0.75. Thus, one cluster was enough to represent the study population.
6	Randomly select the needed numbers of clusters	Of the ten clusters, one cluster (Irbid) was chosen by using a simple random technique.
7	Include in the sample all population members in the selected cluster	All sampled 903 nurses in the cluster (Irbid) will be included in this study, as shown in Table 3.5.

Source*:* Gay and Diehl (1992).

Consequently, one province (a cluster) was randomly selected, and questionnaires were distributed to all the targeted population. The random selection was made by writing the names of all provinces (cluster) on a piece of paper, and then one province was chosen by randomly selecting the piece of paper with the name. As a result of this process of selection, the Irbid province was chosen. Then, the target respondents from each hospital in the Irbid province were calculated by multiplying the number of nurses in each selected hospital by the targeted sample size (i.e., 357), then dividing the result by the total number of nurses in the eight strata (i.e., 903) as shown in Table 3.5. Based on the rate of return of administered questionnaires, the researcher conducted another round of random sampling based on need until the target sample size was achieved.

Table 3.5
Number of Registered Nurses and Population for Each Jordanian Hospital

No.	Hospital	Governorate	Population of nurses	Sample size
1	Abu-Obaidah Hospital	Irbid	45	18
2	Al Yarmouk Hospital	Irbid	95	38
3	AL-Ramtha Hospital	Irbid	111	44
4	Princess Basma Hospital	Irbid	301	119
5	Princess Badea' Hospital	Irbid	51	20
6	Princess Raya Hospital	Irbid	109	43
7	Princess Rahma Hospital	Irbid	132	52
8	Mua'th Bin Jabal Hospital	Irbid	59	23
Total			903	357

Source: Jordanian Ministry of Health (JMoH) (2016).

3.5 OPERATIONALISATION OF VARIABLES

The variables operationalisation, measurement of variables, or instrumentation is a tool or mechanism to describe specific properties of the variables of interest in a study by selecting numbers in a reliable and valid method (Sekaran & Bougie, 2016) and identifying scales that correspond to variance in the concept (Zikmund et al., 2013). This section presents three primary constructs to be measured, namely SMPs, work environment, and safety performance.

The questionnaire was written in English (refer to Appendix B) because all nursing textbooks used in the Jordanian universities are in English, and English is the medium of instruction (Daibes, 2011). However, an Arabic version of the questionnaire was also made available should a need arise for its use (refer to Appendix J). The items are presented in Table 3.7 and are designed to examine how strongly subjects agree or disagree with statements on a 5-point Likert-type scale with the following range from "1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree" (Sekaran & Bougie, 2016). Likert-type responses are prevalent among business researchers (Zikmund et al., 2013), and the Likert-type is a response scale category commonly used within questionnaire-based survey studies

The benefits of using a 5-point scale are several. The literature has suggested that a 5-point Likert-type scale is reliable and valid (Dawes, 2008). Also, this scale can prevent any bias that may distort the results because it has a middle or neutral point (Leung, 2011). Furthermore, similar studies have utilised a 5-point Likert-type scale to understand safety performance (e.g., Alolah, Stewart, Panuwatwanich, & Mohamed, 2015; Hon et al., 2014; Lievens & Vlerick, 2013; Mariani, Curcuruto, Matic, Sciacovelli, & Toderi, 2017; Martínez-Córcoles et al., 2011; Mashia, Subramaniam, & Joharia, 2016; Nuntawinit, Wongkhomthong, Luangamornlert, Chomson, 2017; Vinodkumar & Bhasi, 2010). Finally, a 5-point format reduces the frustration level of a respondent and thereby increases the response rate and the quality of the responses (Babakus & Mangold, 1992; Sachdev & Verma, 2004).

There are 61 questions altogether in the questionnaire, as shown in Table 3.6. The nurses will be asked to respond to all items in the questionnaire on a 5-point Likert-type scale.

Table 3. 6
The number of items used in the survey and source

Variable Name	**Number of Items**	**Scale Source**
Independent Variables		
Safety Management Practices	**38**	
A. Management commitment	9	Vinodkumar and Bhasi (2010)
B. Safety training	6	Vinodkumar and Bhasi (2010)
C. Safety communication and feedback	5	Vinodkumar and Bhasi (2010)
D. Safety rules and procedures	5	Vinodkumar and Bhasi (2010)
E. Workers involvement in safety	5	Vinodkumar and Bhasi (2010)
F. Safety promotion policies	5	Vinodkumar and Bhasi (2010)
G. Cooperation facilitation	3	Yorio and Wachter (2014)
Mediator Variable Work environment	**6**	Tourangeau and McGilton (2004)
Dependent Variables		
Safety Performance	**17**	
A. Safety compliance	4	Neal et al. (2000)
B. Safety participation	4	Neal et al. (2000)
C. Risky behaviour	9	Mearns et al. (2003)

Note: All scales used a 5-point Likert-type scale, except for the work environment, which used a 4-point scale.

Cronbach's alpha was utilised to determine the internal consistency of the measurement scale in these scales. Alphas of more than 0.60 are considered to be acceptable, and those of 0.80 or more are considered to be useful (Sekaran & Bougie, 2016). The reliability of internal consistency measures utilised in this study are shown below and can be considered to be acceptable for the intention to leave measure suitable for the other measures (Sekaran & Bougie, 2016). The section below discusses how the constructs are operationalised and how the instruments were adapted and adopted in measuring the study constructs and mention internal consistency reliability for all variables.

3.5.1 Safety Management Practices

In this study, the measures except cooperation facilitation were adapted from Vinodkumar and Bhasi (2010); the items taken went through minor changes to measure SMPs. The measures used by Vinodkumar and Bhasi were taken from earlier questionnaires by Cheyne, Cox, Oliver, Cox, and Cheyne (2000), and Tomás (1998), Coyle, Sleman, and Adams (1995), Flin, Mearns, O'Connor, and Bryden (2000), Williamson, Feyer, Caerns, and Biancoti (1997), Neal et al. (2000), Varonen and Mattila (2000), Glendon and Litherland (2001), Vredenburgh (2002), and Zohar (1980).

Safety indicators can be categorised into industry-specific versus universal items (Zohar, 2003; Barbera, 2015). The justification for choosing comprehensive indicators is that according to Zohar (2003), these safety indicators are universal safety priorities and have universal features that apply to all industries in which safety is a relevant issue including that of nursing (Jaafar et al., 2017; Mearns et al., 2003; Zohar, 1980). Besides, these instruments are commonly used (Wachter & Yorio, 2014; Probst & Estrada, 2010; Zhang, Lingard, & Nevin, 2015) and play a pivotal role in ensuring that employers comply with safety in an organisation (Mashi, 2014; Vinodkumar & Bhasi, 2010). Furthermore, reliability estimated using Cronbach's alpha of all the instruments was acceptable (Sekaran & Bougie, 2016).

Consequently, the researcher examined SMPs with the following dimensions; management commitment to safety, safety training, safety communication and feedback, safety rules and procedures, workers involvement in safety, safety promotion policies, and cooperation facilitation. These dimensions were chosen because they are commonly used in safety management researches and have been noted to have great statistical significance in explaining safety performance (Hsu et al., 2007; Jiang et al., 2010; Razuri et al., 2007; Vinodkumar & Bhasi, 2009). However, though these dimensions are noted, the safety management constructs were analysed as a second-order higher-order construct. Specific aspects of SMPs are stated below.

3.5.1.1 Management Commitment to Safety

Management commitment to safety is seen as the degree to which top-level management or organisations show commitment to boost workplace safety, which is frequently shown in the safety-related encouragement and support accorded to the employees (Mooren, Grzebieta, Williamson, Olivier, & Friswell, 2014). It also covers the proactive tendencies of management of organisations in identifying, managing, and controlling hazards that are apt to produce accidents in the workplace (Subramaniam, Shamsudin, et al., 2016). Accordingly, nine items will be used to measure management commitment. Some examples of the questions include: “Safety is given high priority by the management,” and “Management considers safety to be equally important as production.” The reliability of the internal consistency of the scale that was previously reported was 0.86 (Vinodkumar & Bhasi, 2010).

3.5.1.2 Safety Training

Safety training refers to training which improves behavioural skills, related knowledge and/or attitudes and also provides the means for lessening accidents (Vinodkumar & Bhasi, 2010). Six items were utilised to measure safety training and were adapted from Vinodkumar and Bhasi (2010). The internal reliability consistency for the scale was previously stated as 0.82 (Vinodkumar & Bhasi, 2010). Some examples of the items include: "Safety issues are given high priority in training programs" and "Newly recruits are trained adequately to learn safety rules and procedures".

3.5.1.3 Safety Communication and Feedback

In this study, the operational definition of feedback and safety communication is the provision of information and data at the safety level of the organisation to assess the levels of risk that may result in workplace accidents (Bentley & Haslam, 2001). Employees should also be urged to provide feedback on safety-related matters to the management and suggest ways to improve work processes and activities (Subramaniam, Shamsudin, et al., 2016).

The measures of safety communication and feedback were adapted from Vinodkumar and Bhasi, 2010, which comprises five items. Some examples of the items include "Management operates an open-door policy on safety issues" and "There are open communications about safety issues in this workplace". Internal consistency reliability was previously reported as 0.70, which is within the accepted range as Vinodkumar and Bhasi (2010b) suggested.

3.5.1.4 Safety Rules and Procedures

Lu and Yang (2011) operationalised safety rules and procedures as the extent to which organisations create clear missions, assign clear roles and responsibilities, set up standards for monitoring employee behaviours, and institute systems for correcting workers' unsafe behaviours.

The measures of safety communication and feedback were adapted from Vinodkumar and Bhasi (2010), which comprise five items. Some examples of the items include "My supervisors and managers always try to enforce safe working procedures" and "Safety inspections are carried out regularly". Internal consistency reliability was previously reported as 0.81, which is within the accepted range, as suggested by Vinodkumar and Bhasi (2010b).

3.5.1.5 Worker Involvement in Safety

Safety worker involvement is a behavioural procedure that includes employees in the upward flow of information and processes of decision-making on safety (Vredenburgh, 2002), whereby employees can participate in decision making, including the formulation of safety policies, procedures and practices, as well as the investigation and evaluation of safety incidents/accidents (Tsao, Hsieh, & Chen, 2017).

The measures of worker involvement in safety were adapted from Vinodkumar and Bhasi (2010), which comprised five items. Some examples of the items include: "Management promotes nurses' involvement in safety-related matters" and "Management consults with nurses regularly about workplace health and safety issues".

The internal consistency reliability was 0.69, which is within the accepted range, as Vinodkumar and Bhasi (2010b) suggested.

3.5.1.6 Safety Promotion Policies

Welander et al. (2004) denied safety promotion as “a process that aims to ensure the presence and maintain the conditions that are necessary to reach and sustain an optimal level of safety" (p. 13). The measures of safety communication and feedback were adapted from Vinodkumar and Bhasi (2010), which comprise five items. Some examples of the items include “Our supervisor becomes very unhappy and angry when employees find out and report unsafe conditions and act in our section.” and “There exists very healthy competition among the employees to find out and report unsafe conditions and acts”. Internal consistency reliability was 0.64, which is within the accepted range, as Vinodkumar and Bhasi (2010b) suggested.

3.5.1.7 Cooperation Facilitation

The operational definition of cooperation facilitation as a component of SMP revolves around employees being urged to cooperate in solving safety matters (Yorio & Wachter, 2014). The measures of safety communication and feedback were adapted from Yorio and Wachter (2014), which comprise three items. An example of the items is “Formal mechanisms are utilised to ensure that key safety information is communicated between off-going and on-coming shifts”. Internal consistency reliability was 0.91, which is within the accepted range, as Yorio and Wachter (2014) suggested.

3.5.2 Work Environment

The work environment refers to "the physical-social-psychological characteristics of a work setting" (Chan & Huak, 2004, p. 207). It is also defined as "the organisational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178). This construct was measured with six items that Tourangeau and McGilton (2004) developed. Also, these items were based on the characteristics of work environments described by Kouzes and Posner (1995).

The researcher adapted the items and made minor alterations where necessary to suit the context of the research. Some examples of the items include: "Nurses who work in this environment have shared goals", "When I or others make decisions, they are supported.", and "Nurses working in this environment feel valued for the work they do". Internal consistency reliability, as Tourangeau and McGilton (2004) reported, was 0.72. This is acceptable to be tested in further studies.

3.5.3 Safety Performance

Safety performance is the behaviours employees exhibit when adhering to safety guidelines and in promoting health and safety at work (Lievens & Vlerick, 2013). Safety participation, safety compliance, and risky behaviours were employed as safety performance indicators and dimensions (Martinez-Corcoles & Stephanou, 2017).

This study adopted four items to measure safety compliance from Neal and Griffin (2000) and four items for safety participation from Neal and Griffin (2000). The justification for choosing these items is that these dimensions are widely utilised and cited (Barbaranelli et al., 2015) and demonstrate cross-country invariance and are crossculturally validated (Barbaranelli et al., 2015). These items were tested among healthcare workers in the hospitals (Mashia et al., 2016; Neal & Griffin, 2006), and the items show high reliability for safety participation ($\alpha = 0.89$) and safety compliance ($\alpha = 0.94$). Moreover, this study adopted nine items to measure risky behaviour from Mearns et al. (2003). The justification for selecting these items was the applicability of these measurement items in different cultures and different contexts (e.g., Martinez-Córcoles et al., 2011, 2013; Mearns et al., 2003). In addition, the instruments show high reliability for risky behaviour ($\alpha = 0.91$).

3.5.3.1 Safety Compliance

The operational definition of safety compliance in this research is employee adherence to safety procedures and the behaviour exhibited in performing work safely (Neal et al., 2000). Some examples of the scales include," I carry out my work in a safe manner" and "I use the correct safety procedures for carrying out my job". The internal consistency reliability of the scale reported was 0.94 (Neal et al., 2000).

3.5.3.2 Safety Participation

In this study, safety participation is operationalised as behaviours which do not contribute directly to the personal safety of an individual but help develop a safety-friendly environment (Chen & Chen, 2014). Some examples of the items include "I put in extra effort to improve the safety of the workplace" and "I promote the safety program within the organisation". The measures of safety participation comprise four items, and the reliability of internal consistency for safety participation was 0,89 (Neal et al., 2000).

3.5.3.3 Risky Behaviour

The operational definition of risky behaviour in this study is that risky behaviour is any activity that increases the likelihood of an accident occurring (Martínez-Córcoles & Stephanou, 2017). Relatedly, risky behaviour is a deviation from normal organisational activities, procedures and expectation that does not translate into immediate serious consequences (Ramanujam & Goodman, 2003; Martinez-Corcoles *et al*., 2013). Nine items were applied to measure safety compliance. Some examples of the items include "I ignore safety regulations to get the job done" and "I break work procedures". The internal consistency reliability for the scale stated was 0.91 (Martínez-Córcoles et al., 2013).

3.6 MEASUREMENT OF VARIABLES

This study adopted items from the previous literature. A total of 38 objects in seven dimensions were used to measure SMPs, six items to measure the work environment and 17 questions to measure the three dimensionss of safety performance. Table 3.7 shows the dimensions, operational definitions, items, and sources from which the items were adopted.

Table 3. 7

The Dimensions, Operational Definition, Items, and Sources

Dimensions	Operational Definition	Items	Sources
Management commitment	"The extent to which management is perceived to place a high priority on safety and acts upon that priority in an effective manner" (Smith, & DeJoy, 2014, p. 50).	1. Safety is given high priority by the management. 2. Safety rules and procedures are strictly followed by the management. 3. Corrective action is always taken when the management is told about unsafe practices. 4. In my hospital, managers/supervisors do not show interest in the safety of workers. 5. Management considers safety to be equally important as production. 6. Members of the management do not attend safety meetings. 7. I feel that management is willing to compromise on safety for increasing production. 8. When near-miss accidents are reported, my management acts quickly to solve the problems. 9. My hospital provides sufficient personal protective equipment for the nurses.	Vinodkumar and Bhasi (2010)
Safety training	A process of providing the necessary safety-related knowledge that workers should be aware of to guide them on how to work safely (Zaira & Hadikusumo, 2017).	1. My hospital gives comprehensive training to the nurses in the workplace on health and safety issues. 2. Newly recruits are trained adequately to learn safety rules and procedures. 3. Safety issues are given high priority in training programmes. 4. I am not adequately trained to respond to emergency situations in my hospital. 5.Management encourages nurses to attend safety training programmes. 6. Safety training given to me is adequate to enable me to assess hazards in hospital.	Vinodkumar and Bhasi (2010)

Table 3.7 (Continued)

Dimensions	Operational Definition	Items	Sources
Safety communication and feedback	The process of promoting mutual understanding and two-way communication between the employer and employees on the organisation's safety and goal requirements (Jaafar, Choong, & Mohamed, 2017).	1. In this hospital, there is a hazard reporting system where nurses can communicate hazard information before incidents occur. 2. Management operates an open-door policy on safety issues. 3. There is sufficient opportunity to discuss and deal with safety issues in meetings. 4. The target and goals for safety performance in my organisation are not clear to the workers. 5. There is open communications about safety issues in this hospital.	Vinodkumar and Bhasi (2010)
Safety rule and procedures	The extent to which organisations create clear missions, assign clear roles and responsibilities, set up standards for monitoring employee behaviours and instituting systems for correcting workers' unsafe behaviours (Lu & Yang, 2011).	1. The safety rules and procedures followed in my company are sufficient to prevent incidents occurring. 2. The facilities in the safety department are not adequate to meet the needs of my organisation. 3. My supervisors and managers always try to enforce safe working procedures. 4. Safety inspections are carried out regularly. 5. The safety procedures and practices in this organisation are useful and effective.	Vinodkumar and Bhasi (2010)
Workers involvement in safety	The process of involving workers in safety decisions, participating in solving safety problems, and consulting with workers on safety issues (Vinodkumar & Bhasi, 2010).	1. Management always welcomes opinion from nurses before making final decisions on safety-related matters. 2. My hospital has safety committees consisting of representatives of management and nurses. 3. Management promotes nurses' involvement in safety related matters. 4. Management consults with nurses regularly about workplace health and safety issues. 5. Nurses do not sincerely participate in identifying safety problems.	Vinodkumar and Bhasi (2010)

Table 3.7 (Continued)

Dimensions	Operational Definition	Items	Sources
Safety promotion policies	Refer to an organisation's strategies set up to encourage reporting hazards and creating awareness among employees (Vinodkumar Bhasi, 2010).	1. In this hospital, safe conduct is considered as a positive factor for job promotions. 2. In this hospital, nurses are rewarded for reporting safety hazards (thanked, cash or other rewards, recognition in a newsletter, etc.). 3. In this hospital, safety week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among the workers. 4. There exists very healthy competition among the nurses to find out and report unsafe condition and acts. 5. Our supervisor becomes very unhappy and angry when employees find and report unsafe conditions and acts in our section.	Vinodkumar and Bhasi (2010)
Cooperation facilitation	as a component of SMPs revolves around employees being encouraged to cooperate with each other in resolving safety issues (Yorio & Wachter, 2014).	1. Nurses are encouraged to cooperate with each other on resolving safety issues. 2. Formal communication mechanisms among nurses are robust enough to ensure that information being shared covers all necessary safety information. 3. Formal mechanisms are utilised to ensure that key safety information is communicated between off-going and on-coming shifts.	Yorio and Wachter (2014)
Work Environment	"The organisational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178).	1. Nurses who work in this environment have shared goals. 2. Nurses working in this environment feel valued for the work they do. 3. When I or others make decisions, they are supported. 4. Nurses working in this environment have opportunities for personal development. 5. Nurses working in this environment have opportunities for professional development. 6. Nurses working in this environment have the flexibility to change how they organise their work.	Tourangeau and McGilton (2004)

Table 3.7 (Continued)

Dimensions	Operational Definition	Items	Sources
Safety compliance	Employee adherence to safety procedures and the behaviour exhibited in performing work safely (Neal et al., 2000).	1. I carry out my work in a safe manner. 2. I use all the necessary safety equipment to do my job. 3. I use the correct safety procedures for carrying out my job. 4. I ensure the highest levels of safety when I carry out my Job.	Neal et al. (2000)
Safety participation	Behaviours that do not directly contribute to an individual's safety, but which do help to develop an environment that supports safety (Chen & Chen, 2014).	1. I promote the safety program within the hospital. 2. I put in extra effort to improve the safety of the hospital. 3. I help my co-workers when they are working under risky or hazardous conditions. 4. I voluntarily carry out tasks or activities that help to improve workplace safety.	Neal et al. (2000)
Risky behaviour	"Any acts that increase the likelihood of an accident occurring" (Martínez-Córcoles & Stephanou, 2017, p. 94).	1. I ignore safety regulations to get the job done. 2. I break work procedures. 3. I take chances to get the job done. 4. I bend safety rules to achieve a target. 5. I get the job done better by ignoring some rules. 6. Conditions at the workplace keep me from working according to the rules. 7. I take shortcuts that involve little or no risk. 8. I break rules due to management pressure. 9. I am pressured by my workmates to break the rules.	Mearns et al. (2001)

3.7 DATA COLLECTION

The process of data collection with primary or secondary data sources is an essential part of a quantitative study (Sekaran & Bougie, 2016). Primary data are collected directly by the researchers, such as using a questionnaire survey, which is considered the most common method for collecting data in a short time with less bias in response (Sekaran & Bougie, 2016). The questionnaire is described as a collection of previously prepared questions to be answered and returned to the study participants to finish the research process (Sekaran & Bougie, 2016).

3.7.1 Questionnaire Design

A well-structured questionnaire comprising 67 closed-ended multiple-choice questions was employed by the researcher for data collection in this research. The instrument included items related to the three multi-dimensional constructs of this study, and seven questions covered the demographic characteristics of the nurses. Specifically, the three primary constructs for this study are SMPs (7 dimensions), work environment, and safety performance (3 dimensions).

The instrument was subdivided into two parts. Section A comprises the seven demographic questions of gender, age, years of experience, highest level of education, and job designation. Section B, C, and D comprise all items related to the variables under examination. The survey instrument was designed in a booklet form with a cover letter from the researcher and the design was done in such a way that it attracts the respondents to improve the success of the data collection process (Cresswell, 2003) and increase the response rate (Trochim, 1999).

3.7.2 Translation of the Questionnaires

According to Sekaran and Bougie (2016), to prevent response errors, the functional research instrument should be constructed in the preferred language of the participants. The original questionnaire survey was conducted in English because all nursing textbooks used in Jordanian universities are in English, and English is the medium of instruction (Daibes, 2011). Similarly, English had recently spread in the bilingual country of Jordan (Drbseh, 2013). Thus, when it is required, the Arabic version of the questionnaire was provided.

Therefore, back translation was recommended and required in this case to check the efficiency of the questionnaire translation (Douglas & Craig, 2007). The translation process was done through two stages:

1) From the English version to Arabic by Okour center for translation and training which had legal certification for certified translation.

2) Then, the translated version was retranslated from Arabic into English by another translator who works in the same center (refer to Appendix J).

3.7.3 Ethical Considerations

As described on the first page of the survey, participation in this study was voluntary. The intent of the research and the approximate time to complete the questionnaire was stated. More notably, because the information on the survey was kept confidential and for academic purposes only, the participants were not required to include any identification details in terms of gender, ethnicity, or even income. Besides, because the researcher was the only one who had access to this material, the participants had the right to not complete the questionnaire at any time. Previously, a letter of request was sent to the Director of the Research and Ethics Committee of the JMoH in order to obtain written approval for the conduct of this report. The JMoH Research and Ethics Committee also granted ethical clearance for this work (see Appendix F).

3.7.4 Data Collection Procedure

The questionnaire used in collecting data in quantitative research was well noted. This method proved to be useful as the primary tool for collecting data within a short period while also reducing response bias (Sekaran & Bougie, 2016; Zikmund et al., 2013). Additionally, this study is cross-sectional as opposed to a longitudinal survey that usually consumes more time (Sekaran & Bougie, 2016).

To achieve the study objectives, the data for this study were gathered by distributing a self-administered questionnaire to the selected respondents with a cover later stating the aim of the study to the respondents. An official letter was obtained from the OYA Graduate School of Business to enable the researcher to get approval from JMoH (refer to Appendix D). The letter and proposal copy was forwarded to the Jordanian health ministry research ethics committee for review. Written consent was obtained from the committee with the protocol approval number MOH REC 1800163 (refer to Appendix E) and approval letter to collect data from eight hospitals belonging to the JMoH in Irbid (refer to Appendix F and G).

Data was collected from the nurses in the eight (JMoH) hospitals in Irbid, including Abu-Obaidah, Al Yarmouk, AL-Ramtha, Princess Basma, Princess Badea', Princess Raya, Princess Rahma and Mua'th Bin Jabal hospitals which were chosen using cluster sampling. The researcher and two research assistants distributed the questionnaire. Data collection commenced for three months (November 2018 to February 2019).

The questionnaires utilised in this research were collected from nurses of Jordanian public hospitals. These nurses received a total of 800 questionnaires via post-mail and personal distribution. To achieve and increase the response rates, several were carried out through SMS, personal visits, phone calls, and emails to the respondents to motivate, encourage and remind them to respond (Dillman et al., 2009; Traina, MacLean, Park, & Kahn, 2005). Afterwards, an email was sent to participating hospitals to show appreciation for their support, as Dillman et al. (2009) suggested.

Each hospital head of the nursing units was asked to assist the researcher in accessing the target nurses who had the questionnaire administered face-to-face between the researcher and the two assistants. Also, the questionnaire and a pen were handed over to each participating nurse as motivation and token of appreciation.

Three weeks after administering the questionnaire, 196 completed questionnaires were collected from the respondents, which the researcher labeled as early responses. After several follow-ups to remind participants who had not yet completed and returned their questionnaires using regular visits, an additional of 327 questionnaires were received and labeled as late responses. Overall, of the 800 questionnaires distributed, 523 were returned. This accounted for the response rate of 65.3%. However, six questionnaires were removed because the respondents filled only the demographics part of the questionnaire, making the valid response number at 517. This accounted for an effective response rate of 64.6%.

In addition, the number of registered nurses declared by the JMoH (2016) did not reflect the real number of the registered nurses in the hospitals because many registered nurses were on leave (i.e., casual leave, sick leave, annual leave, maternity leave, holiday leave, and leave without pay). So, they were naturally excluded from the study sample.

Two problems occurred during the data collection process. One problem encountered during the data collection process was the time taken to collect the questionnaires. Another was that some respondents had filled the form but left it at home.

3.8 PRE-TEST PROCEDURE

3.8.1 Content Validity

A pre-test was carried out to assess the content or face validity of the study instrument and pilot study. The validity of the content assesses the extent a tool captures the meaning of certain concepts in an instrument (Babbie, 2004). Therefore, to evaluate the content validity of the study instrument, a small number of prospective respondents or academic or industry experts related to the research area were consulted and their opinions sought on the wordings and phrasing of the questionnaire (Sekaran & Bougie, 2016).

Information about content validity is essential (Polit, Beck & Owen, 2007). Content validity has been defined as "the degree to which a sample of items, taken together, constitute an adequate operational definition of a construct" (Pilot & Beak, 2006, p. 490). Nurse researchers characteristically provide evidence of content validity for tools by calculating a content validity index (CVI) based on the ratings of experts of item relevance to derive high-quality measurements. Lynn (1986) suggested that a valid scale requires the evaluation of a panel of three experts minimum, but that more than ten experts were unnecessary.

For the proposed study, six experts were selected in two groups. The first group consisted of three experienced heads of nursing units in the JMoH hospitals, while three lecturers from business administration, Universiti Utara Malaysia, participated in the second group. The items were evaluated for relevance, clarity, and simplicity by using a four-point Likert scale (Not relevant = 1, Needs some revision = 2, Relevant but needs minor revision" = 3, and Very relevant = 4) to avoid a neutral and ambivalent midpoint (Polit & Beck, 2006).

After that, the guidelines for CVI recommended by Pilot and Beck (2006) were used. "The CVI is a plausible method of estimating the content validity of a new (or revised) scale" (Polit et al., 2007, p. 466). Pilot and Beck (2006) recommended choices one and two as not relevant, and three and four as relevant 1.00. The (I-CVI) should be 1.00 when 3-5 experts evaluate the items and a minimum of 0.78 for 6-10 experts (Pilot & Beck, 2006). Grant and Davis (1997) stated that the Scale Level Content Validity Index (S-CVI) of 0.80 or higher is acceptable. Polit et al. (2007) recommended "that for a scale to be judged as having excellent content validity, it would be composed of items that had I-CVIs of .78 or higher and an S-CVI/Ave of .90 or higher" (p. 466).

In this study, all the constructs reported higher S-CVI/Ave ranging from 0.92 to 1.00 and higher I-CVIs ranging from 0.83 to 1.00 (see Appendix I). However, Tables 3.8 and 3.9 illustrate the summary of S-CVI and I-CVI.

Table 3. 8
Summary of Scale Level Content Validity Index (S-CVI)

Construct	**Number of Items**	**S-CVI/Ave**
Management Commitment to safety	9	1.00
Safety Training	6	1.00
Safety communication and Feedback	5	1.00
Safety rules and procedures	5	1.00
Workers involvement in safety	5	1.00

Table 3.8 (Continued)

Construct	Number of Items	S-CVI/Ave
Safety promotion policies	5	0.97
Cooperation facilitation	3	1.00
Work Environment	6	1.00
Safety compliance	4	1.00
Safety participation	4	1.00
Risky behaviour	9	0.98

Furthermore, the team of experts was asked to comment on the clarity of wording used for all the constructs. One of the experts advised one item of safety promotion policies to be reworded from “In my hospital, safe-conduct is considered as a positive factor for job promotions” to “In my hospital safe behaviour is considered as a positive factor for job promotions”. Also, another nursing expert asked for item seven of safety management commitment, “I feel that management is willing to compromise on safety for increasing production”, to be reworded to "I feel that the management of the hospital is willing to compromise on safety for increasing healthcare delivery”. After integrating this correction and adjustment, the final instruments were prepared for the main study.

Table 3. 9

Summary of Items Level Content Validity Index (I-CVIs)

Constructs	Number of Items	I-CVI
Management commitment	**9**	
1. Safety is given high priority by the management.		1.00
2. Safety rules and procedures are strictly followed by the management.		1.00
3. Corrective action is always taken when the management is told about unsafe practices.		1.00
4. In my hospital, managers/supervisors do not show interest in the safety of workers.		1.00
5. Management considers safety to be equally important as production.		1.00
6. Members of the management do not attend safety meetings.		1.00
7. I feel that management is willing to compromise on safety for increasing production.		1.00
8. When near-miss accidents are reported, my management acts quickly to solve the problems.		1.00
9. My hospital provides sufficient personal protective equipment for the nurses.		1.00
Safety training	**6**	
1. My hospital gives comprehensive training to the nurses in the workplace on health and safety issues.		1.00
2. Newly recruits are trained adequately to learn safety rules and procedures.		1.00
3. Safety issues are given high priority in training programmes.		1.00
4. I am adequately trained to respond to emergency situations in my hospital.		1.00
5.Management encourages nurses to attend safety training programmes.		1.00
6. Safety training given to me is adequate to enable me to assess hazards in hospital.		1.00
Safety communication and feedback	**5**	
1. In this hospital, there is a hazard reporting system where nurses can communicate hazard information before incidents occur.		1.00
2. Management operates an open-door policy on safety issues.		1.00
3. There is sufficient opportunity to discuss and deal with safety issues in meetings.		1.00
4. The target and goals for safety performance in my organisation are not clear to the workers.		1.00
5. There is open communications about safety issues in this hospital.		1.00
Safety rule and procedures	**5**	
1. The safety rules and procedures followed in my company are sufficient to prevent incidents occurring.		1.00
2. The facilities in the safety department are not adequate to meet the needs of my organisation.		1.00
3. My supervisors and managers always try to enforce safe working procedures.		1.00
4. Safety inspections are carried out regularly.		1.00
5. The safety procedures and practices in this organisation are useful and effective.		1.00
Workers involvement in safety	**5**	
1.Management always welcomes opinion from nurses before making final decisions on safety-related matters.		1.00
2. My hospital has safety committees consisting of representatives of management and nurses.		1.00
3. Management promotes nurses' involvement in safety related matters.		1.00
4. Management consults with nurses regularly about workplace health and safety issues.		1.00
5. Nurses do not sincerely participate in identifying safety problems.		0.83

Table 3.9 (Continued)

Constructs	Number of Items	I-CVI
Safety promotion policies	**5**	
1. In this hospital, safe conduct is considered as a positive factor for job promotions.		1.00
2. In this hospital, nurses are rewarded for reporting safety hazards (thanked, cash or other rewards, recognition in a newsletter, etc.).		1.00
3. In this hospital, safety week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among the workers.		1.00
4. There exists very healthy competition among the nurses to find out and report unsafe condition and acts.		1.00
5. Our supervisor becomes very unhappy and angry when employees find and report unsafe conditions and acts in our section.		1.00
Cooperation facilitation	**3**	
1. Nurses are encouraged to cooperate with each other on resolving safety issues.		1.00
2. Formal communication mechanisms among nurses are robust enough to ensure that information being shared covers all necessary safety information.		1.00
3. Formal mechanisms are utilised to ensure that key safety information is communicated between off-going and on-coming shifts.		1.00
Work Environment	**6**	
1. Nurses who work in this environment have shared goals.		1.00
2. Nurses working in this environment feel valued for the work they do.		1.00
3. When I or others make decisions, they are supported.		1.00
4. Nurses working in this environment have opportunities for personal development.		1.00
5. Nurses working in this environment have opportunities for professional development.		1.00
6. Nurses working in this environment have the flexibility to change how they organise their work.		1.00
Safety compliance	**4**	
1. I carry out my work in a safe manner.		1.00
2. I use all the necessary safety equipment to do my job.		1.00
3. I use the correct safety procedures for carrying out my job.		1.00
4. I ensure the highest levels of safety when I carry out my Job.		1.00
Safety participation	**4**	
1. I promote the safety program within the hospital.		1.00
2. I put in extra effort to improve the safety of the hospital.		1.00
3. I help my co-workers when they are working under risky or hazardous conditions.		1.00
4. I voluntarily carry out tasks or activities that help to improve workplace safety.		1.00
Risky behaviour	**9**	
1. I ignore safety regulations to get the job done.		1.00
2. I break work procedures.		0.83
3. I take chances to get the job done.		1.00
4. I bend safety rules to achieve a target.		1.00
5. I get the job done better by ignoring some rules.		1.00
6. Conditions at the workplace keep me from working according to the rules.		1.00
7. I take shortcuts that involve little or no risk.		1.00
8. I break rules due to management pressure.		1.00
9. I am pressured by my workmates to break the rules.		1.00

3.8.2 Pilot Study

The second pre-test is a pilot study. It is an initial research conducted with a survey instrument before it is utilised for the research for which it is intended (Zikmund et al., 2013). A pilot study is usually conducted to 1) determine the reliability and validity of questionnaire items, 2) evaluate the adequacy of the wordings of the items, 3) ascertain if the questions are framed in a manner that will produce a better response, and 4) know if the respondents would be able to supply the needed data. It is essential to conduct a pilot study so that possible short-comings in planned research may be revealed and addressed before the primary research is undertaken (Altman et al., 2006; Gay, Mills, & Airasian, 2009).

Cronbach's alpha was utilised to determine the internal consistency of the measurement scale in these scales. Alphas of more than 0.60 are considered to be acceptable, and those of 0.80 or more are supposed to be useful (Sekaran & Bougie, 2016). The reliability of the internal consistency of the measures used for this survey is shown below. The measure is considered as acceptable for the intention to leave measure and suitable for the other measures (Sekaran & Bougie, 2016). According to Hill (1998) and Malhotra (2008), 10 to 30 respondents are adequate for a pilot study to measure instrument adequacy. Additionally, Emory and Cooper (1991), reported that approximately 25 to 100 respondents are an appropriate sample size for the pilot study.

The pilot test of this study's instruments was conducted in November 2018 among 100 nurses from the JMoH who were not part of the study's selected sample. The researcher handed out the questionnaires and collected them personally. Eighty questionnaires were returned from 100 surveys distributed, which represented a response rate of 80%. Version 23 of the “Statistical Package for Social Science” (SPSS) was used to evaluate Cronbach’s alpha instruments. The Cronbach’s alpha is a standard reliability estimate statistical test (Zikmund et al., 2013; Sekaran & Bougie, 2016). All the negative questions from the questionnaire were reverse-scored. The result, as presented in Table 3.11 below, all instruments are reliable.

Table 3.10
Summary of Reliability Test for Pilot Test

Constructs	**No of items**	**Cronbach’s alpha**
Management commitment to safety	9	0.73
Safety training	6	0.75
Safety communication and feedback	5	0.81
Safety rules and procedures	5	0.87
Workers involvement in safety	5	0.78
Safety promotion policies	5	0.73
Cooperation facilitation	3	0.73
Work environment	6	0.81
Safety compliance	4	0.84
Safety participation	4	0.85
Risky behaviour	9	0.78

3.10 TECHNIQUES OF DATA ANALYSIS

Descriptive and inferential statistics were utilised to analyse the data generated from the respondents. The Statistical Package for the Social Sciences (SPSS) software version 23 was used to describe and analyse the demographic variables of the study. However, before conducting the descriptive statistics, several tests were done to determine the data coding, missing data, remove outliers, perform fundamental statistical assumptions, and test the profile of the respondents.

The researcher used structural equation modeling (SEM) to assess the measurement and structural models of the study. SEM is a group of statistical models that have become standard in marketing and management research that seeks to clarify the relationship between multiple variables (Hair, Hult, Ringle, & Sarstedt, 2017; Sarstedt, Ringle, Smith, Reams, & Hair, 2014). Specifically, SEM looks at the structure of interrelationships articulated in a series of equations where these equations demonstrate the relationship among constructs based on the theoretical framework of a study (Hair et al., 2017).

A few reasons have been given as to why SEM is a better-preferred choice for data analysis against other multivariate techniques. First, to measure a second-order or higher-order construct (multi-dimensional latent variable) and for complex models with mediators and moderators, SEM is most recommended (Sarstedt et al., 2014). Second, to simultaneously provide an overall test of model fit and individual parameter estimate tests, SEM is noted as being more capable. SEM is set to test a set or relationships represented by multiple equations (Hair et al., 2017). Finally, SEM allows an assessment of numerous interrelated dependence relationships (Hair et al., 2017). Succinctly put, SEM permits separate simultaneous model interdependencies between multiple exogenous and endogenous latent variables by specifying the structural model employed by a statistical application (Hair et al., 2017).

Moreover, SEM was founded on two standard multivariate analysis techniques; they are the covariance-based (CB-SEM) and the variance-based SEM-Partial Least Squares technique PLS-SEM (Hair et al., 2017). Characteristically, the CB-SEM is used in confirmation of the theory, while the SEM based on variance is used to develop a theory (Hair et al., 2017). Table 3.11 illustrates the difference between the variance and covariance approach in terms of objective, approaches, assumptions, and more.

Table 3. 11
Comparison of PLS and Covariance Based Analysis

Criterion	**PLS (Variance based SEM)**	**Covariance based SEM**
Objective	Prediction oriented	Parameter oriented
Approach	Variance	Covariance
Assumption	Nonparametric	Parametric
Implication	Optimal for prediction	Optimal for parameter estimation
Parameter estimates	Explicitly estimated	Indeterminate
Model complexity	Large complexity	Small to moderate complexity
Sample size	Minimum of 20-100	200-800

Sources: Hulland, Ryan, and Rayner (2010).

According to Hajmohammad and Vachon (2014), environmental and safety management concepts have rarely been examined in a single study, wherein no established theories can directly serve as the theoretical basis for presumed relationships, making PLS-SEM an appropriate analysis tool for the exploratory nature of this study. Further, it is a better means of prediction to extend the existing theory and perform confirmatory testing for it (Hair et al., 2017). This study investigated the mediation effect of work environment on the relationship between SMPs and safety performance.

The PLS-SEM approach is a powerful statistical tool in social and behavioural sciences that tests several relationships simultaneously (Sarstedt et al., 2014). It has flexibility in terms of data requirements and complexity of the model and relationship characteristics (Sarstedt et al., 2014). As per Hair et al. (2017), the PLS technique is a second-generation structural equation modelling. This technique is compatible with structural equation models that have latent variables and a series of cause-and-effect relationships (Henseler, 2017). Furthermore, PLS places minimal limitations on distributional characteristics of the data and sample size and the ability to handle both reflective and formative constructs (Hair et al., 2017).

PLS-SEM was applied to assess the measurement and structural model to determine the research model in this study. PLS-SEM is a technique of variance-based structural equation modelling used in the design and analysis of latent variables, especially composites (Henséler 2017). Consequently, it is a useful tool to examine hypotheses and to answer questions about the study (Cepeda, Nitzl, & Roldán, 2017). Table 3.12 presents these hypotheses and their statistical methods of analysis, which are employed in this study.

Table 3. 12

The Research Hypotheses to be Tested and the Statistical Analysis

Research Hypotheses	**Statistical Analysis**
H1 - H7	Path Analysis in SEM (PLS).
H8 - H10	Path Analysis in SEM and Maximum Likelihood Estimation Bootstrapping (PLS).

Previous researchers have shown that the system selection process is closely connected to the study's objective, which is expected to improve the final results (Henseler, Ringle, & Sarstedt, 2015). The measurement and structural model in this study were evaluated in Smart-PLS version 3.2.8. Since the current research examines the mediating effect of the work environment on the relationship between SMPs as unidimensional and safety performance, the use of PLS-SEM is more suitable to assess the hypothesised relationships. Preacher and Hayes (2008) suggested testing a mediator by bootstrapping the indirect effect. Bootstrapping, a nonparametric resampling procedure, has been recognised as one of the more rigorous, accurate and robust methods for testing the mediating effect (Hayes, 2009; Mackinnon, 2012).

3.11 OVERVIEW OF MEASUREMENT PERSPECTIVES

The ability to analyse both reflective and formative construct is one of the critical features of PLS-SEM (Hair et al., 2017). As explained by Ramayah et al. (2018), the choice of a construct being reflective or formative depends on the nature of the indicators, and it is the key to determine the perspective at the onset. The prerequisite of conducting any form of test on the measurement or structural model is the establishment of the measurement perspective, which essentially determines the causality of the indicators to their latent variables and the structural model (Memon et al., 2017).

Referring to the reflective construct is where the arrow points from the construct to the indicator, thus implying that the indicators are the effect of the construct (Ramayah et al., 2018). A formative construct is where the signs form a construct where the direction of the arrow points from the indicators to the construct (Ringle et al., 2018).

Ringle et al. (2018) suggested that although reflective constructs are a norm in the adoption of PLS-SEM for the field of HRM, formative constructions in social science research have become increasingly valuable. They are aligned with specific approaches to HRM research. Hence, before proceeding to examine SMPs, explaining why it was selected as a second-order, formative construct in the context of the present study is essential.

3.11.1 Safety Management Practices as a Second-Order Construct

Hierarchical components models (HCMs) or second-order are introduced for complex research constructs (Sarstedt, Hair, Becker, Cheah & Ringle, 2019). Generally, most HCMs typically have two levels of constructs, known as a higher or second-order construct and a lower or first-order construct (Becker, Klein, & Wetzels, 2012). For this research, the SMPs' dimensions were modeled as first-order, and SMPs construct was shaped as second-order constructs, respectively.

Hair et al. (2018) established that the core of the issue for the second-order construct and first-order construct determines the relation that they have with each other. Notably, the structure of the second order is a fundamental principle that is either described (i.e., reflective) or interpreted (i.e., formative) with its dimensions or constructs for the first order; in other words, the constructs of the second order are often not directly correlated to any indicator. Instead, they are related to constructs of the first order and are assessed by first-order construct indicators.

As highlighted by Chen and Sousa (2005) and Sarstedt et al. (2019), there are several advantages of having a second-order construct. Firstly, it puts a structure within the model that allows a more parsimonious way of reporting the relationships among the constructs (Diamantopoulos & Siguaw, 2006; Becker et al. 2012). Furthermore, the higher-order approach simplifies the interpretation of complex measurement structures by reducing the number of structural model relationships (Becker et al. 2012; Tehsean, Sajelan, Gadar & Ramayah, 2017). The practice of having a second-order construct was widely adopted across the management of safety, such as the safety climate (Mohamed, 2002; Stave et al., 2008), safety culture (Frazier et al., 2013), risk assessment (Gouda & Saranga, 2018) and SMPs (Fernández-Muñiz et al., 2007; Chen & Chen, 2014; Wachter & Yorio, 2014; Yiu et al., 2019).

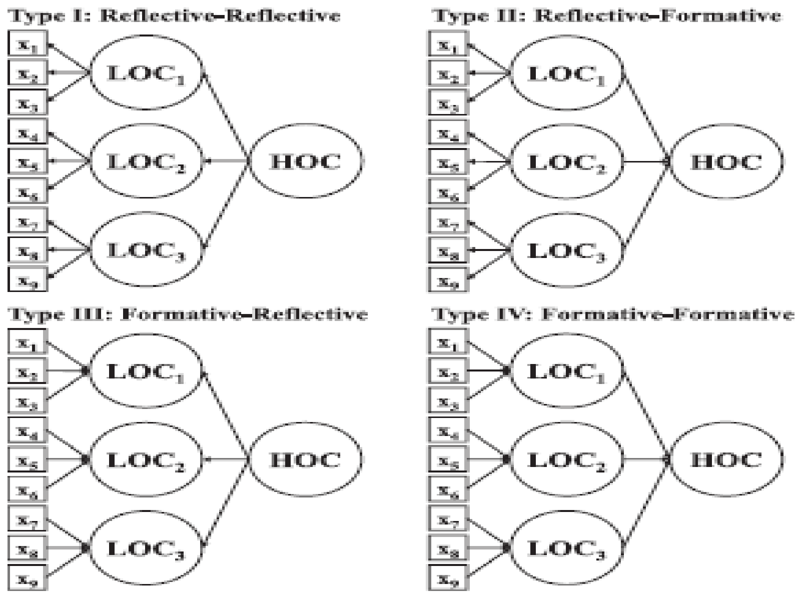
The use of SMP as a unidimensional construct is allowed, given the fact that this position is widely researched and accepted (Fernández-Muñiz et al., 2007; Vinodkumar & Bhasi, 2010). Besides, there is still no convergence of opinion regarding the number of dimensions that should constitute SMPs constructs (Abdullah, 2010; Robson et al., 2007; Thomas, 2012). This implies that a researcher can navigate in choosing SMP constructs based on their content-context elements (Chen & Zorigt, 2013; Silvestre, Gimenes, & Neto, 2017; Thomas, 2012; Zhao, Kazemi, Liu & Zhang, 2018; Ashour & Hassan, 2019).

Regarding the utilisation of the second higher model for this study, the researcher observed that the higher-order factor model presented an excellent choice when compared with the seven factors and keeping the variance structure model to a higher-order factor model where the safety of management practices latent construct was instituted as the prevalent latent variable of the seven different practices of safety managements subscales. These results reflect those of earlier studies (Wachter & Yorio, 2014), which examined the latent construct of SMPs as a common latent factor for ten distinct safety management practice subscales.

The majority of studies consider SMPs to be a latent variable and rarely examine individual effects of the essential component of SMPs. Very few research pieces of evidence relate perceived SMPs to safety performance, indirectly or directly as a unidimensional construct (Vinodkumar & Bhasi, 2010). Therefore, the present study investigates the role of the work environment in the relationship between perceived SMPs and safety performance.

3.11.2 Types of Hierarchical Component Models

There are four types of HCMs (reflective-formative, reflective-reflective, formative-formative, and formative-reflective) (Becker et al., 2012; Cheah et al., 2019; Ringle et al., 2012; Sarstedt et al., 2019) as in Figure 3.3 below.



Note: LOC = lower-order component; HOC = higher-order component structure's

Figure 3.3
Different types of higher-order constructs.
Source: Sarstedt et al., 2019

First, the reflective-reflective perspective posits a series of first-order latent factors with reflective indicators. At the same time, these first-order latent variables are reflective of the second-order construct themselves (Jarvis et al., 2003). However, this form of the construct has received criticism. Lee and Cadogan (2013) opined that a reflective-reflective perspective does not exist as it could be unidimensional since the first-order constructs and the corresponding indicators are all interchangeable. As such, Becker et al. (2012) indicated that it was not necessary "to model the lower-order constructs as separate constructs because they should be identified according to a reflective logic" (p. 364).

The second form of the construct is the reflective-formative perspective. As explained by Hair et al. (2018), the first-order constructs form the second-order constructs, but they may not necessarily share a common cause. In other words, while the first-order constructs may have their own respective discriminant validity, they are “a general concept that fully mediates the influence on subsequent endogenous variables” (Becker et al., 2012).

Third, the formative-reflective perspective explains that the first-order constructs are built on a set of different indicators, and the second-order constructs represent “part of the different first-order constructs” (Hair et al., 2018, p. 46). Having such a perspective allows certain studies to acquire a broader coverage of the domain, which may have been insufficient by having a stand-alone first-order construct to address (Becker et al., 2012). Additionally, using such a perspective in empirical studies can be somewhat rare (Jervis et al., 2003).

Lastly, the formative-formative perspective reflects that it is “useful to structure a complex formative construct with many indicators into several sub-constructs” (Hair et al., 2018, p. 46). Unlike others, a formative-formative perspective reflects dimensions that represent different facets of the overall domain, but they do not necessarily correlate (Jarvis et al., 2003). Hair et al. (2018) cited an example that this form of HCM is suitable for firm performance as a higher-order construct with different aspects of performance by different business units as their first-order constructs.

3.11.3 Rationale for Reflective-Formative Construct

In view of the above, this study adopted a reflective-formative perspective on SMPs due to the following reasons. First, the first-order constructs between the indicators and the dimensions of the constructs are reflective as the indicators reflect the outcomes of the various aspects.

Second, the present research is the ‘complementarity’ construct of different types of SMPs, consisting of seven reflective constructs: (1) management commitment to safety, (2) safety Promotion Policies, (3) safety rules and procedures, (4) safety communication and feedback, (5) worker’s involvement in safety, (6) safety training and (7) cooperation facilitation relationship that reflects the overall structure of complementarity. This construct adequately reflects Lee and Cadogan's (2013) critique because the seven dimensions are unique and, therefore, not interchangeable. This construct is possibly best represented in a reflective model.

Third, in view of constructs between the latent variable and the different dimensions of SMPs, a formative view has been adopted as a compound score, such as the safety climate summed up as a First Order Construct (Varonen & Mattila, 2000), whereas safety climate and safety management practices are considered as the same level and dimension in some cases (Marín, Lipscomb, Cifuentes, & Punnett, 2017; Pousette, Larsson, & Törner, 2008). Also, empirical evidence has shown that the safety climate instrument measurement is linked to safety practices (Shannon & Norman, 2009; Mohamed, 2002). Moreover, Yiu et al. (2019) represented safety management for improving construction safety performance as a formative second-order.

Hence, this study introduced the alignment of the SMP dimensions as the first-order, SMPs as unidimensional as a higher-order construct, the indicators to the lower-order constructs as reflective, and the relation among the lower-order constructs to the higher-order constructs as formative. Thus, this study employed the "reflective-formative" perspective.

Empirically, it is justified that the reflective-reflective perspective posits a series of first-order latent factors with reflective indicators. At the same time, these first-order latent variables are reflective of the second-order construct themselves (Jarvis et al., 2003). However, this form of construct has received criticism. Lee and Cadogan (2013) and Becker et al. (2012) have found that it is not necessary to model first-order constructs as distinct constructs since they have to be defined by reflective logic or, if there are already many different dimensions, these dimensions should be modeled as formative. Temme and Diamantopoulos (2016) argue that "if a researcher believes that a construct contains multiple facets or dimensions, then they are making an error in defining the construct as reflective."

Lee and Cadogan (2013), Rigdon (2014), and Cheah et al. (2019) argued that reflective structures of the higher-order at worst do not exist, and do not have meaning at best, as it could be unidimensional since the first-order constructs and the corresponding indicators are all interchangeable. Besides, for partial least squares structural path modeling, the reflective–formative type of HCMs have become a popular choice for researchers (Ringle et al. 2012).

Hence, a second form of the construct is the reflective-formative perspective. As Hair et al. (2018) clarified, the first-order structures shape the second-order constructions but may not necessarily share a common cause. In other words, while the first-order constructs may have their proper discriminatory validity, a general concept could be formed that fully mediates the effects on subsequent endogenous variables (Becker et al. 2012). This study, therefore, focused on the hierarchical reflective-formative model and empirical application, as it received only limited attention in the existing PLS-SEM literature and the smallest parameter estimation bias although it is the most commonly utilised model type (Sarstedt et al., 2019; Ringle et al., 2012; Becker et al., 2012). Thus, testing the study model with this second-order reflective-formative theoretical specification is an essential contribution of this study.

3.11.4 Rationale for Two-Stage Approach

Essentially, it is important to carefully consider the choice of approach to avoid misplaced modelling that may lead to bias (Becker et al., 2012). Considering the above, this current study adopted the two-stage approach as it fitted the operationalisation of the constructs. In this study, the perspective of the proposed model reflected reflective-formative constructs, in which Ringle et al. (2012) suggested using the two-stage approach to overcome the constraints of a repeated approach to the indicators. Moreover, the two-stage method helped estimate a higher-level, more variant model of analysis without the need for lower-order structures (Becker et al., 2012). Therefore, in the second-stage of analysis, the scores obtained for the first-order constructs were represented as indicators for the second-order constructs (Beckar et al., 2012). The two-stage method thus prevented multiple linearities between the indicators (Van Riel et al., 2017).

3.12 CHAPTER SUMMARY

This chapter discussed the methodology utilised to undertake this research. Specifically discussed in this chapter are the conceptual definitions of variables, the measurement, and operationalisation of the variables, research design, population, sampling and sample size determination, data collection methods, data analysis techniques, the pilot/pre-test and overview of measurement perspectives. The next chapter describes the results obtained from the analysis.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 INTRODUCTION

The primary objective of this section is to present the results of the study based on the data collected from public hospital nurses in Jordan. This chapter addresses the response rate, socio-demographic feature descriptions and initial data screening explicitly. The measurement model was calculated using Smart-PLS version 3.2.8 of the PLS path modeling (PLS-PM) to evaluate the validity of the discriminate construct, convergent and reliability of internal consistencies. Besides that, the structural model demonstrated the significance of the model's effect size, predictive relevance and path coefficient. Additionally, the findings of the work environment's mediating effects on the relationships are discussed.

4.2 RESPONSE RATE

The survey responses used in this research were obtained from nurses in Jordanian public hospitals. These nurses were given a total of 800 questionnaires via post-mail and personal distribution. To achieve and increase the response rates, several were carried out through SMS, emails, personal visits, and phone calls to the respondents to motivate, encourage and remind them to respond (Dillman et al., 2009; Traina et al., 2005). Afterwards, an email was sent to participating hospitals to show appreciation for their support, as Dillman et al. (2009) suggested.

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Eight hundred questionnaires were sent to the respondents, of which 523 were returned. This provides a response rate of 65.4%. Of the 523 surveys returned, six could not be used because they were incomplete. Thus, 517 questionnaires were used for further analysis in this study. Consequently, the effective response rate was 64.6% (refer to Table 4.1).

This rate is consistent with a recent paper conducted by Jordanian public hospitals prepared by Al-Zghoul (2016), which reported an average response rate of 51% for surveys. Equally, the response rate was sufficient in this study for analysis, according to Sekaran and Bougie (2016) and Hair et al. (2010) who said that a 30% response rate was sufficient for survey research. All questionnaires returned that were usable were coded using SPSS version 23.

Table 4.1
Response Rate of the Questionnaire

Response	**Frequency Rate**
Number of questionnaires Distributed	800
Returned Questionnaires	523
Returned and Usable Questionnaires	517
Returned and Excluded Questionnaires	6
Questionnaires not Return	277
Response Rate	65.3%
Effective Response Rate	64.6%

4.3 DATA SCREENING

Data screening is essential in multivariate analysis, as it helps a researcher detect any possible violation of assumptions regarding the technique of data investigation (Hair et al., 2010), mainly as SmartPLS is adopted as an essential technique of analysis (Tabachnick & Fidell, 2013). In this research, after the data was entered in version 23 of the SPSS software, data screening was conducted. The following preliminary analyses of data were performed:

1) missing value analysis, 2) outliers' evaluation, 3) multicollinearity test, and 4) normality test (Tabachnick & Fidell, 2013; Hair et al., 2010).

4.3.1 Data Coding

For easy identification by the researcher in both SPSS and PLS, all the items of the questionnaire variables were coded using two or more letter. Specifically, all items were coded as follows: management commitment (MangCom1 to MangCom9), safety training (SafTran1 to SafTran6), safety rules and procedures (SafRP1 to SafRP5), workers involvement (WISaf1 to WISaf5), safety communication and feedback (SafCoFe1 to SafCoFe5), promotion and policies (SafPP1 to SafPP5), cooperation facilitation (CF1 to CF3), work environment (WE1 to WE6), safety compliance (Safcom1 to Safcom4), safety participation (SafP1 to SafP4), and risky behaviour (RB1 to RB9).

4.3.2 Missing Values

Descriptive statistics were computed after coding the data into SPSS version 23 to identify the number of missing values. Of the 31,537 data points, 175 were randomly missed, which accounted for 0.55% (refer to Table 4.2). According to Tabachnick and Fidell, (2013), missing values of 5% or less are non-significant to affect the outcomes of the study or results (refer to Appendix H). Therefore, when a missing value is missing completely at random and is 5% or less, it is recommended that it can be replaced using expectation maximisation (Mooi, Sarstedt, & Mooi-Reci 2018; Hair et al., 2017). Descriptive statistics of the missing value indicated that the total amount of missing values in this study was less than 5%. Thus, values missing were replaced using SPSS version 23 by expectation maximisation method.

Table 4.2
Total Number of Missing Values

Latent Variables	Number of Missing Values
Management Commitment	19
Staff Training	17
Safety Communication and feedback	09
Safety Rules and Procedures	12
Workers Involvement	18
Promotion and Policy	14
Cooperation Facilitation	06
Work Environment	20
Safety Compliance	10
Safety Participation	14
Risky Behaviour	36
Total	175 out of 31537 points (0.55%)

Note: Percentage of missing values is arrived at by dividing the total number of missing values for the entire data set by the total number of data points multiplied by 100.

4.3.3 Assessment of Outliers

Per Hair et al. (2010), outliers are observations considerably different from other observations, meaning cases whose scores in the given data are substantially different from all the others (Byrne, 2010). The existence of regression coefficients in a data set can mislead the estimates and make the results unreliable (Verardi & Croux, 2008). Therefore, it is compulsory to detect and also treat outliers when using multivariate analysis (Hair et al., 2010). As suggested by Hair et al. (2010), the assessment of outliers can allow a researcher to review cases that may significantly affect the results of a report. In this analysis, the Mahalanobis distance (D2) (Mahalanobis, 1948), as proposed by Tabachnick and Fidell (2013), was used to classify and handle multivariate outliers. Tabachnick and Fidell (2013) defined D2 as "the distance between a case and the centroid of the remaining cases where the centroid is the point created at the intersection of the mean of all variables" (p. 74).

The study being multivariate in nature treats multivariate outliers as opposed to outlier's univariate (Hair et al., 2017). Therefore, compared with the Chi-square value, D2 was determined by linear methods of regression in version 23 of SPSS. Sixty-one items were used in this study; therefore, 60 represented the degree of freedom in the Chi-square table with $P<0.001$, so the standard is 99.62 (Tabachnick & Fidell, 2013). Any figure falling within D2 of 99.62 or higher is a multivariate outlier and is required to be excluded from the data set. Using Tabachnick and Fidell's (2013) criteria for the detection of outliers, the maximum D2 values were 58.81, and therefore no outliers were identified and excluded from the data set. Consequently, the final collection of data was 517.

4.3.4 Multicollinearity Test

Multicollinearity is a state in which two or more exogenous latent constructs become highly correlated, and its existence within the exogenous latent construct affect the estimates of regression coefficients and their statistical significance (Hair, Black, Babin, Anderson, & Tatham, 2006; Chatterjee & Yilmaz, 1992). In structural equation modelling, multicollinearity can be a severe problem and happens when there are too high intercorrelations among the predictor variables (Hair, Ringle, & Sarstedt, 2011; Hair et al., 2010).

Standard errors of coefficients are increased with the presence of multicollinearity and weakens the analysis (Tabachnick & Fidell, 2013). Multicollinearity in this study was assessed using two methods (Peng & Lai, 2012; Chatterjee & Yilmaz, 1992). Firstly, the tolerance value and the variance inflated factor (VIF) were evaluated using regression results from SPSS. According to Hair et al. (2011), multicollinearity is a concern if the tolerance value is less than 0.20 and VIF value is higher than 5. Table 4.3 shows the VIF values and tolerance values for the exogenous latent constructs of the study. The table shows that tolerance values ranged from .318 – .595, which are greater than 0.20. Likewise, VIF values ranged between 1.680– 3.147, which are less than the threshold of 5.

Table 4.3
Variance Inflated Factor (VIF) Value, Tolerance and Condition Index

	Collinearity Statistics	
Latent Constructs	**Tolerance**	**VIF**
Management Commitment	.318	3.147
Safety Training	.404	2.476
Safety Communication and Feedback	.589	1.698
Safety Rules and Procedures	.356	2.809
Workers Involvement	.431	2.319
Safety Promotion Policies	.512	1.952
Cooperation Facilitation	.595	1.680

Second, the correlation matrix of the exogenous constructs was evaluated using SPSS. A correlation coefficient of 0.90 and above shows multicollinearity among exogenous constructs (Hair et al., 2010). All exogenous constructs are presented in the correlation matrix Table 4.4. The correlations among the exogenous constructs in this study were less than 0.90, suggesting the independence of the exogenous constructs which were not highly correlated.

Table 4.4
Correlation Matrix of the Exogenous Latent Constructs

Constructs	**WI**	**SCF**	**CF**	**SPP**	**ST**	**SRP**	**MC**
Workers involvement	1.000						
Safety communication and feedback	.017	1.000					
Cooperation facilitation	-.120	-.054	1.000				
Safety promotion policies	-.137	-.231	.053	1.000			
Safety training	.195	.156	.150	.017	1.000		
Safety rules and procedures	-.260	-.012	-.201	-.212	.126	1.000	
Management commitment	.163	.197	.109	.180	-.300	.264	1.000

4.3.5 Normality Test

According to Hair, Hult, Ringle and Sarstedt (2014) and Henseler, Ringle, and Sinkovics (2009), in PLS-SEM, the normality assumption of the data is lenient. While PLS-SEM is non-parametric and does not require normal information, evaluating the data as to whether they stray too far from normality is essential. Although the lack of normality in PLS-SEM is less severe, nevertheless, researchers should still investigate PLS-SEM results carefully when there are substantial deviations of the distribution from normality. Thus, "it is nevertheless worthwhile to consider the distribution when working with PLS-SEM" (Hair et al., 2017, p. 10) because in assessing the parameters, extremely non-normal data can be a problem and may expand the standard errors from bootstrapping (Hair et al., 2014).

Normality, per Hair et al. (2010), refers to the bell-shaped curve of the data distribution. A normal sample data distribution is portrayed as a symmetrical bell-shaped curve that has the peak range of frequencies in the middle, with a smaller range of frequencies toward the extremes (Gravetter & Wallnau, 2000). As recommended by Tabachnich and Fidell (2013), statistical or graphical methods can be used to assess the normality of constructs.

However, they added that if the sample is more than 200, instead of using inference tests, the distribution shape should be evaluated. Statistical analyses in another argument are less sensitive in small samples and large samples are sensitive; researchers are suggested to use both graphical plots and statistical tests to assess the actual degree of deviation from normality (Hair et al., 2010). Graphical methods of the histogram and normal Q-Q plot and skewness and kurtosis (Tabachnick & Fidell, 2013; Kline, 2011; Hair et al., 2010) are applied to evaluate the normality of the data in this current research.

As per the Kline (2011), the absolute value of skewness should be <3 and kurtosis value of <10. However, according to Curran et al. (1996), the values of skewness and kurtosis should be less than two and less than seven. Based on the recommendation by Curran et al. (1996), Table 4.5 displays the absolute values of skewness and kurtosis for all constructs within a proper range of less than two and less than seven. The data in this analysis also follow ordinary trends as all bars on the histogram were similar to a regular curve. Consequently, normality assumptions in this work were not violated (see Appendix K).

Table 4.5
Values of Skewness and Kurtosis

	Skewness		Kurtosis	
Constructs	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Management Commitment	.083	.107	-.932	.214
Safety Training	-.039	.107	-.361	.214
Safety Communication	-.414	.107	.181	.214
Safety Rules and Procedures	.282	.107	-.740	.214
Workers Involvement	.154	.107	-.730	.214
Safety Promotion Policies	.046	.107	-.262	.214
Cooperation facilitation	-.033	.107	-.543	.214
Work environment	-.249	.107	-.167	.214
Safety compliance	-1.171	.107	.767	.214
Safety participation	-.873	.107	.551	.214
Risky behaviour	.224	.107	-.155	.214

4.4 RESPONSE BIAS

4.4.1 Test of Non-Response Bias

Non-response bias is a common error that a scholar makes in assessing the traits of a sample for the reason that some classes of target respondents' surveys have been underestimated due to non-response (Barg, 2002). To assess non-response bias, participants were categorised into two separate samples depending on their period of reply to the questionnaires relating to all the constructions (Armstrong & Overton, 1977). In the present research, the approach chosen for the testing of non-response bias was the comparison of the response of participants who answered the questionnaires early and of others who answered them late, as suggested by Armstrong and Overton (1977). SPSS version 23 was used to assess the non-response bias.

Table 4.6

Result of Independent-Samples T-test for Non-Response Bias

Constructs	Response Time	N	Mean	Std. Dev.	Std. Error	Levene's Test for Equality of Variances F	Sig.
MC	Early response	196	3.26	.654	.047		
	Late Response	321	3.04	.627	.035	0.478	0.490
ST	Early response	196	3.46	.722	.052		
	Late Response	321	3.08	.687	.038	1.278	0.259
SCF	Early response	196	2.75	.641	.046		
	Late Response	321	3.02	.666	.037	0.661	0.417
SRP	Early response	196	2.72	.689	.049		
	Late Response	321	2.95	.750	.042	0.079	0.778
WI	Early response	196	2.61	.762	.054		
	Late Response	321	2.93	.790	.044	1.327	0.250
SPP	Early response	196	2.56	.657	.047		
	Late Response	321	2.78	.666	.037	1.538	0.215
CF	Early response	196	2.74	.744	.053		
	Late Response	321	3.00	.836	.047	0090	0.926
WE	Early response	196	3.08	.717	.051		
	Late Response	321	3.21	.803	.045	3.491	0.062
SC	Early response	196	3.77	.840	.060		
	Late Response	321	4.03	.816	.046	2.594	0.108
SP	Early response	196	3.83	.725	.052		
	Late Response	321	3.95	.809	.045	2.632	0.105
RB	Early response	196	2.54	.648	.046		
	Late Response	321	2.62	.647	.036	0.297	0.586

Note: MC=management commitment to safety, ST=safety training, WI=worker involvement, SCF=safety communication, SRP=safety rules and procedures, SPP=safety promotion policies, CF=cooperation facilitation, WE= work environment SC=safety compliance, SP=safety participation, RB=risky behaviour.

It was argued that the presence of bias should be considered as it may result in predictions that are ambiguous and imprecise (De Beuckelaer & Wagner, 2012; Wagner & Kemmerling, 2010). Hence, to test non-response bias, the current study evaluates the likelihood for statistically significant variation in the response between early and late groups respondents and time-trend extrapolation style, which involves matching the early and late respondents (Clottey & Grawe, 2014) as presented in Table 4.6 below.

The data in Table 4.6 show the variance between the early response and late response. In general, the two-tailed t-test indicates no significant difference between early respondents and late respondents based on the study variables.

4.4.2 Common Method Bias Test

Common method variance (CMV) refers to "variance that is attributable to the measurement method rather than to the construct of interest" (Podsakoff, MacKenzie, Lee & Podsakoff, 2003, p. 879). However, researchers agreed that common method variance for scholars using a self-reported survey is a significant concern (Podsakoff et al., 2012). Moreover, CMV appears in a report using the same method to obtain data and self-reported data from a single source systemically (Podsakoff & MacKenzie, 2012). CMV's presence in research could help "inflate relationships between variables measured by self-reports" (Conwey & Lance, 2010, p. 325) since self-reported data from public hospital nurses have been used in the present analysis; thus, it has the possibility of getting CMV (Podsakoff et al., 2012). Examining its effect is therefore essential (Bagozzi, Yi & Phillips, 1991).

As Podsakoff et al. (2003) suggested, both procedural and statistical remedies were applied to minimise the CMV effect in the present study. The opinions of experts were used to eliminate vague concepts (Podsakoff et al., 2003). Then, the researcher assured the respondents of confidentiality and that there were no right or wrong answers so that their responses would be as honest as possible (Podaskoff et al., 2003).

Subsequently, the unrotated factor analysis for sixty-one items was performed using SPSS by Harman's single test. The results revealed that there were no unique factors that constituted more than 50% of the variance. The findings showed that 29.5% of the variation was less than 50% of a single factor, which suggests that the process bias is absent in this study (Podsakoff et al., 2012).

4.5 DESCRIPTIVE STATISTICS OF THE RESPONDENTS' DEMOGRAPHIC CHARACTERISTICS

The respondents' characteristics in the sample are the gender of the respondents, marital status, age, high educational qualification, experience and accident rate. Additionally, the features of the individual samples have also been discussed in detail.

Table 4.7
Descriptive Statistics

Samples Description	**Number**	**Percentage (%)**
Gender		
Male	249	48.2
Female	268	51.8
Total	517	100
Marital Status		
Married	291	56.3
Single	147	28.4
Divorced	41	7.9
Widowed	38	7.4
Total	517	100

Table 4.7 (Continued)

Samples Description	Number	Percentage (%)
Highest Educational Qualification		
Bachelor's degree	279	54
HND	109	21.1
Master's degree	74	14.3
Ph.D.	55	10.6
Total	517	100
Age		
21-29	130	25.1
30-38	195	37.7
39-47	110	21.3
48-56	58	11.2
Over 56	24	4.6
Total	517	100
Experience	**Number**	**Percentage (%)**
Less Than 3 Years	139	26.9
4-8 Years	195	37.7
9-15 Years	113	21.9
Over 15 Years	70	13.5
Total	517	100
Accident		
Yes	392	75.8
No	125	24.2
Total	517	100
Number of Accidents		
No Accidents	125	24.2
1-3	245	47.4
4-8	113	21.9
9-15	19	3.7
Over 15	15	2.9
Total	517	100

Table 4.7 highlights the demographic characteristics of the participants. Although the margin is slight, more female nurses responded compared to their male counterparts; females were 268 (51.8%) while there were 249 (48.2%) for males. With regards to marital status, Table 4.7 also shows that the majority are married at 291 (56.3%), while 147 (28.4%) were single, 41 (7.9%) were divorced, and 38 (7.4) lost their partners and hence were widowed. In terms of their highest educational qualification, the majority of the respondents, (279 or 54.0%) had bachelor's degree, while 109 (21.1%) possessed a higher national diploma (HND) and 74 (14.3%) and 55 (10.6%) acquired masters and Ph.D. respectively. For the respondents' age, those between the age of 30-38 participated highest at 195 (37%) compared to those who ranged between 21-29, 39-47, 48-56 and those above 56 years with the latter having the least representation at 24 (4.6%). Further, for the respondents' experience in the nursing profession, from the table, 139 (26.9 %) had less than three years experience in the profession, but the highest at 195 representing 37.7% of the participants had worked for 4-8 years, and those working 9-15 years and more than 15 years of experience in the healthcare industry were 113 (21.9) and 70 (13.5) respectively.

Some of these respondents had experienced different types and degrees of accidents when discharging their duties. From the table, the majority of them at 392 (75.8%) indicated that they encountered such accidents while 125 (24.2%) had never experienced such kinds of unforeseen occurrences. For those who in one way or the other were involved in any accident in their nursing profession, the table shows the rate of their accidents. Those with the lowest rate of accidents at 1 to 3 times dominated with 245 (47.4%). However, 113 representing 21.9% were involved in accidents 4 to 8 times. Meanwhile, 19 (3.7%) of them had experienced accidents 9 to 15 times, and another 15 (2.9%) were unfortunate to have been involved in different kinds of an accidents more than 15 times.

4.6 DESCRIPTIVE STATISTICS OF ALL LATENT CONSTRUCTS

The descriptive statistics for whole variables utilised in the present research are described in this segment. These statistics include standard deviation of all latent constructs and mean values. In this study, all latent variables were assessed by using a 5-point Likert scale with uniform descriptive presenters ranging from 1 = strongly disagree to 5 = strongly agree. Table 4.8 indicates the overall mean range from 2.617 to 3.930. The safety participation means and the standard deviation was (M=3.930 SD=0.833). This value suggests that the participants perceived safety participation as moderate.

The standard deviation and mean of safety compliance were (SD= 0.779, M=3.907), suggesting that their perception of safety compliance is also moderate and marginally higher than that of safety participation. Risky behaviour has a standard deviation and mean of (M=2.617, SD=0.756), indicating a low level of risky behaviour. The participant's descriptive statistics of the seven dimensions of the perceived SMPs have shown that the mean value for safety training (SD=0.855, M=3.240) was relatively higher than the mean for the existing six SMPs. Cooperation facilitation had the smallest mean value (SD=0.832 M=2.724). Besides that, participants showed relatively high impressions of the working environment (SD=0.774, M=3.16), as shown in Table 4.8 below.

Table 4.8

Descriptive Statistics for all Research Constructs of the Study

Research Variables	No. of Items	Mean	Std. Deviation
Management commitment	9	3.0949	.87754
Safety training	6	3.2407	.85503
Safety communication and feedback	5	2.9336	.80164
Safety rule and procedures	5	2.8044	.88013
Workers involvement	5	2.8850	.95368
Safety promotion policies	5	2.7682	.83156
Cooperation facilitation	3	2.7240	.83208
Work Environment	6	3.1599	.77380
Safety compliance	4	3.9304	.83319
Safety participation	4	3.9071	.77945
Risky behaviour	9	2.6178	.75683

4.7 EVALUATION OF PLS-SEM PATH MODEL RESULTS

The results for this section were obtained by using PLS path modelling, which is the technique proposed by Henseler et al. (2009) including 1) evaluating the suitability of the measurement model and 2) assessing the structural model (Hair et al., 2014). The measuring model included examining the reliability of internal consistency, reliability of individual items, discriminating validity, and converging validity. Before the structural model was evaluated, this study examined the weight, significant weight, and VIF of the formative specified first-order constructs (Ringle et al., 2012). Then, this research evaluated the structural model by assessing the significance of the path coefficients, assessing the effect size, determining the R-squared value levels, assessing the relevance of the predictive model and examining the mediating effect's significance.

4.7.1 Results of the Measurement (Outer) Models

The measurement model evaluates each item's input in describing its relevant constructs and calculates how well the combined set of items symbolise the variable (Hair et al., 2014). Research teams sometimes assess the measurement model by evaluating reliability and validity measurement, i.e., individual item reliability, internal consistency reliability, and convergent validity discriminant validity (Henseler et al., 2009; Hair et al., 2014; Hair et al., 2011). Per Henseler, Habona, and Ray, (2016), “if the specified measurement (or outer) model does not possess minimum required properties of acceptable reliability and validity, then the structural (inner) model estimates become meaningless” (p. 10).

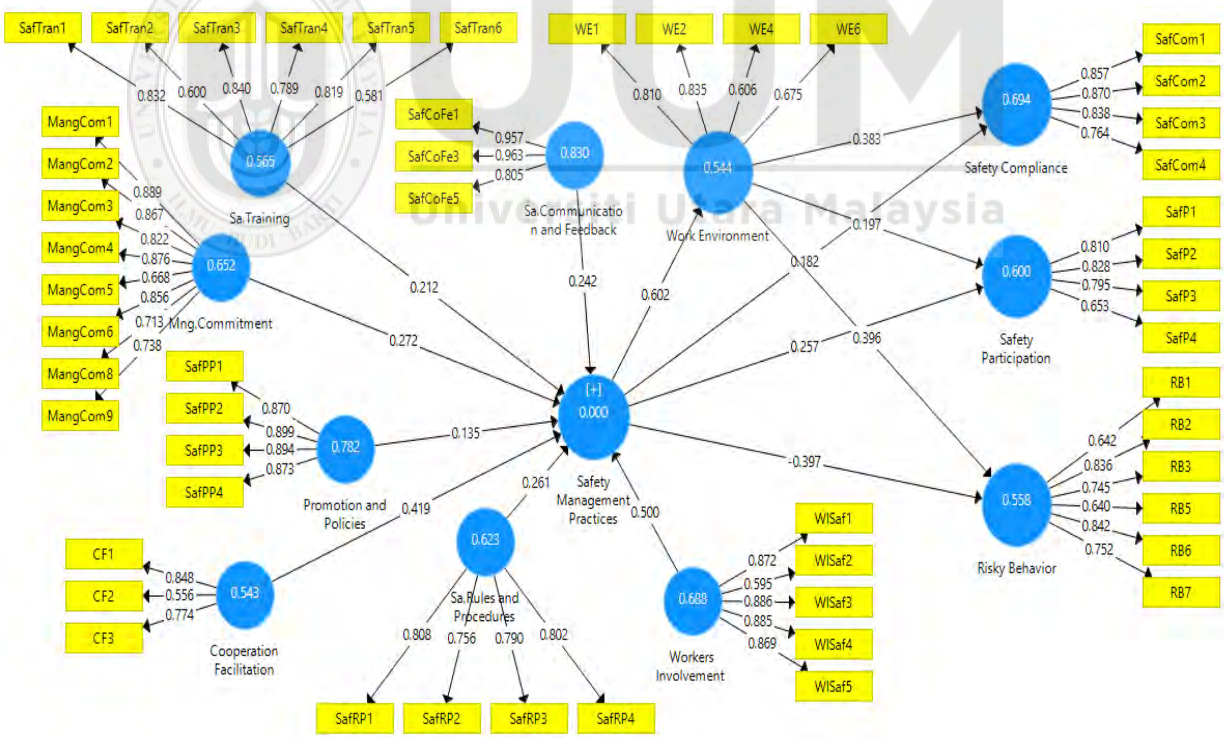

Figure 4.1
Measurement Model

The reliability of each item was measured based on each item's factor loadings on its respective constructs (Hair et al. 2017). Standardised loading is usually at least 0.708, which explains over 50% of the item's variance by the variable (Henselar et al. 2009). Heir et al. (2017) stated that “indicators with outer loadings between 0.40 and 0.70 should be considered for removal only if the deletion leads to an increase in composite reliability and AVE above the suggested threshold value” (p. 107).

The outer loading of items under 0.40 was deleted in this research, as seen in Table 4.9 and Figure 4.1, thus increasing the composite reliability and AVE values (Hair et al., 2014). Consequently, ten items were deleted out of the total items of 61 because of their loadings below the threshold of 0.40. Therefore, 51 items were retained in the whole model as they had loadings above 0.40.

4.7.1.2 Internal Consistency Reliability

The reliability of internal consistency for variables could be assessed via a construct’s composite reliability (CR) or Cronbach’s alpha (CA) (Peterson & Kim, 2013). However, CA is criticised for undermining the true reliability (Hair et al., 2019), as it does not undertake tau-equivalence, i.e., equivalent loading of the factor for individual items, which can prohibit CR underestimation and reliability of internal consistency which is more appropriate for PLS-SEM (Henseler et al., 2009; Hair et al., 2014;). Therefore, CR has been reported in this study. The CR coefficient must be at least 0.70 or higher, as indicated by Hair et al. (2014) and Bagozzi and Yi (1988). As shown in Table 4.9, the CR of variables reached the acceptable minimum standard of 0.70 and more for the measures used for internal consistency proposed by applicable reliability (Hair et al., 2017; Bagozzi & Yi, 1988; Fornell & Larcker 1981).

4.7.1.3 Convergent Validity

Convergent validity is to be the degree to which predictors epitomise the intended variables and, when measuring the same variable, actually correlate with each other (Hair et al. 2009). In this research, the average extracted variance (AVE) of these variables evaluates convergent validity. The AVE values explain the average shared variation between a variable and its correlating items (Fornall & Larckar, 1981). Typically, if AVE values are 0.5 or more, adequate convergent validity is indicated (Bagozzi & Yi, 1988; Chin, 1998; Ali, Rasoolimanesh, Sarstedt, Ringle, & Ryu, 2018). As shown in Table 4.9, the AVE values ranged from 0.543 to 0.830, meaning that all the constructs showed satisfactory convergent validity levels.

Table 4.9
Convergent Validity

Constructs	**Items**	**Loadings**	**CR**	**AVE**
Management Commitment	MangCom1	0.889	0.937	0.652
	MangCom2	0.867		
	MangCom3	0.822		
	MangCom4	0.876		
	MangCom5	0.668		
	MangCom6	0.856		
	MangCom8	0.713		
	MangCom9	0.738		
Safety Training	SafTran1	0.832	0.884	0.565
	SafTran2	0.600		
	SafTran3	0.840		
	SafTran4	0.789		
	SafTran5	0.819		
	SafTran6	0.581		

Table 4.9 (Continue)

Constructs	Items	Loadings	CR	AVE
Safety Communication	SafCoFe1	0.957	0.936	0.830
	SafCoFe3	0.963		
	SafCoFe5	0.805		
Safety Rules and Procedures	SafRP1	0.808	0.869	0.623
	SafRP2	0.756		
	SafRP3	0.790		
	SafRP4	0.802		
Worker Involvement	WISaf1	0.872	0.915	0.688
	WISaf2	0.595		
	WISaf3	0.886		
	WISaf4	0.885		
	WISaf5	0.869		
Safety Promotion Policies	SafPP1	0.870	0.935	0.782
	SafPP2	0.899		
	SafPP3	0.894		
	SafPP4	0.873		
Cooperation Facilitation	CF1	0.848	0.776	0.543
	CF2	0.556		
	CF3	0.774		
Work Environment	WE1	0.810	0.824	0.544
	WE2	0.835		
	WE4	0.606		
	WE6	0.675		
Safety Compliance	SafCom1	0.857	0.901	0.694
	SafCom2	0.870		
	SafCom3	0.838		
	SafCom4	0.764		
Safety Participation	SafP1	0.810	0.856	0.600
	SafP2	0.828		
	SafP3	0.795		
	SafP4	0.653		
Risky behaviour	RB1	0.642	0.882	0.558
	RB2	0.836		
	RB3	0.745		
	RB5	0.640		
	RB6	0.842		
	RB7	0.752		

4.7.1.4 Discriminant Validity

Another criterion is the discriminant validity, which assesses to what extent a construct from other constructs is not the same (Byrne, 2010; Hair et al., 2010). Discriminant validity could also be described as the degree for which a variable notably differs from other variables (Duarte & Raposo, 2010). Discriminant validity was determined in this research by using the square root of the AVE of a variable. It must be higher than correlations with other latent constructs (Fornell & Larcker, 1981), loadings, cross-loadings (Chin (1998) and HTMT. As seen in Table 4.10, the AVE square root (bolded values) was higher than the building's correlations, which indicated sufficient discriminant validity (Fornell & Larcker, 1981).

Table 4.10
Fornell-Larcker Discriminant Validity Criteria

Constructs	CF	MC	PP	RB	SCF	SRP	ST	SC	SP	WE	WI
CF	**0.737**										
MC	-0.551	**0.808**									
PP	0.414	-0.622	**0.884**								
RB	-0.167	0.264	-0.215	**0.747**							
SCF	0.567	-0.74	0.62	-0.233	**0.911**						
SRP	0.561	-0.696	0.638	-0.212	0.695	**0.789**					
ST	-0.517	0.737	-0.546	0.206	-0.682	-0.633	**0.751**				
SC	0.292	-0.204	0.245	-0.044	0.292	0.251	-0.193	**0.833**			
SP	0.302	-0.235	0.215	-0.181	0.313	0.212	-0.22	0.667	**0.775**		
WE	0.377	-0.249	0.314	0.157	0.327	0.435	-0.241	0.493	0.352	**0.738**	
WI	0.544	-0.663	0.603	-0.191	0.698	0.663	-0.66	0.265	0.295	0.456	**0.829**

Note. Diagonals (**in bold**) represent the square root of the average variance extracted (AVE), while the off diagonals are correlations among constructs. Diagonal elements should be larger than off-diagonal elements to establish discriminant validity

Also, discriminant validity was ascertained using Chin's (1998) standard by comparing the loadings of the items with other items in the cross-loadings (see Table 4.11). Cross-loadings (item-level discriminant validity) is a criteria to assess discriminant validity. This criterion is more substantial in terms of signifying discriminant validity (Henseler et al., 2015). Per Gefen and Straub (2005), "discriminant validity is shown when each measurement item correlates weakly with all other constructs except for the one to which it is theoretically associated" (p. 92). In this study, cross-loadings were assessed to provide support for discriminant validity.

Table 4.11

Loadings and Cross Loadings

Constructs	Items	CF	MC	PP	RB	SCF	SRP	ST	SC	SP	WE	WI
CF	CF1	**0.848**	-0.567	0.462	-0.196	0.536	0.557	-0.509	0.229	0.254	0.298	0.500
	CF2	**0.556**	-0.412	0.211	-0.088	0.408	0.336	-0.439	0.120	0.164	0.045	0.284
	CF3	**0.774**	-0.268	0.214	-0.076	0.335	0.337	-0.250	0.266	0.237	0.399	0.391
MC	MangCom1	-0.519	**0.889**	-0.475	0.202	-0.644	-0.578	0.526	-0.265	-0.254	-0.3	-0.549
	MangCom2	-0.385	**0.867**	-0.539	0.240	-0.595	-0.556	0.576	-0.124	-0.227	-0.153	-0.528
	MangCom3	-0.441	**0.822**	-0.576	0.226	-0.629	-0.58	0.442	-0.178	-0.202	-0.15	-0.572
	MangCom4	-0.516	**0.876**	-0.470	0.213	-0.629	-0.561	0.509	-0.268	-0.249	-0.298	-0.538
	MangCom5	-0.445	**0.668**	-0.507	0.190	-0.523	-0.541	0.555	-0.154	-0.084	-0.221	-0.516
	MangCom6	-0.377	**0.856**	-0.512	0.225	-0.591	-0.534	0.563	-0.118	-0.408	-0.219	-0.137
	MangCom8	-0.378	**0.713**	-0.469	0.214	-0.575	-0.535	0.537	-0.085	-0.117	-0.127	-0.521
	MangCom9	-0.450	**0.738**	-0.483	0.207	-0.582	-0.612	0.517	-0.061	-0.137	-0.163	-0.552
PP	SafPP1	0.330	-0.537	**0.870**	-0.124	0.502	0.551	-0.454	0.231	0.149	0.296	0.482
	SafPP2	0.398	-0.564	**0.899**	-0.243	0.589	0.574	-0.509	0.206	0.226	0.266	0.580
	SafPP3	0.398	-0.560	**0.894**	-0.252	0.586	0.575	-0.509	0.202	0.227	0.257	0.578
	SafPP4	0.330	-0.536	**0.873**	-0.128	0.506	0.555	-0.456	0.230	0.148	0.298	0.483
RB	RB1	-0.027	0.164	-0.107	**0.642**	-0.125	-0.111	0.117	-0.102	-0.247	0.107	-0.106
	RB2	-0.132	0.291	-0.222	**0.836**	-0.250	-0.197	0.253	0.021	-0.103	0.166	-0.156
	RB3	-0.180	0.118	-0.123	**0.745**	-0.126	-0.144	0.075	-0.05	-0.116	0.086	-0.149
	RB5	-0.025	0.159	-0.108	**0.640**	-0.119	-0.105	0.112	-0.104	-0.245	0.104	-0.107
	RB6	-0.140	0.304	-0.234	**0.842**	-0.260	-0.207	0.255	0.012	-0.105	0.164	-0.162
	RB7	-0.178	0.122	-0.130	**0.752**	-0.128	-0.154	0.079	-0.039	-0.100	0.069	-0.160
SCF	SafCoFe1	0.546	-0.697	0.556	-0.231	**0.957**	0.635	-0.657	0.286	0.305	0.297	0.542
	SafCoFe3	0.560	-0.613	0.560	-0.227	**0.963**	0.654	-0.66	0.293	0.310	0.311	0.554
	SafCoFe5	0.437	-0.608	0.582	-0.177	**0.805**	0.610	-0.539	0.215	0.236	0.286	0.510
SRP	SafRP1	0.463	-0.598	0.553	-0.190	0.583	**0.808**	-0.502	0.182	0.130	0.360	0.496
	SafRP2	0.427	-0.471	0.445	-0.129	0.476	**0.756**	-0.418	0.101	0.104	0.35	0.452
	SafRP3	0.457	-0.575	0.484	-0.140	0.574	**0.790**	-0.541	0.235	0.196	0.333	0.562
	SafRP4	0.424	-0.549	0.526	-0.205	0.554	**0.802**	-0.528	0.261	0.229	0.333	0.573

Table 4.11 (continued)

ST	SafTran1	-0.432	0.603	-0.462	0.201	-0.572	-0.544	**0.832**	-0.172	-0.177	-0.223	-0.567
	SafTran2	-0.295	0.464	-0.269	0.054	-0.414	-0.350	**0.600**	-0.066	-0.048	-0.017	-0.352
	SafTran3	-0.459	0.641	-0.498	0.209	-0.600	-0.586	**0.840**	-0.186	-0.179	-0.252	-0.607
	SafTran4	-0.387	0.555	-0.414	0.164	-0.499	-0.465	**0.789**	-0.142	-0.196	-0.201	-0.503
	SafTran5	-0.413	0.590	-0.442	0.166	-0.535	-0.508	**0.819**	-0.167	-0.219	-0.216	-0.527
	SafTran6	-0.316	0.456	-0.310	0.051	-0.432	-0.324	**0.581**	-0.078	-0.117	-0.050	-0.336
SC	SafCom1	0.236	-0.137	0.162	0.015	0.212	0.197	-0.162	**0.857**	0.527	0.505	0.221
	SafCom2	0.250	-0.171	0.198	-0.013	0.269	0.188	-0.164	**0.870**	0.585	0.411	0.224
	SafCom3	0.249	-0.157	0.235	-0.037	0.233	0.227	-0.155	**0.838**	0.560	0.397	0.222
	SafCom4	0.244	-0.241	0.241	-0.146	0.278	0.241	-0.165	**0.764**	0.571	0.293	0.221
SP	SafP1	0.293	-0.182	0.145	-0.193	0.284	0.175	-0.185	0.526	**0.810**	0.283	0.258
	SafP2	0.214	-0.101	0.130	-0.007	0.185	0.125	-0.114	0.580	**0.828**	0.348	0.173
	SafP3	0.153	-0.117	0.108	-0.117	0.163	0.113	-0.100	0.551	**0.795**	0.292	0.194
	SafP4	0.279	-0.371	0.314	-0.193	0.362	0.266	-0.312	0.396	**0.653**	0.143	0.309
WE	WE1	0.289	-0.232	0.243	0.119	0.293	0.239	-0.205	0.495	0.390	**0.810**	0.335
	WE2	0.307	-0.195	0.218	0.124	0.286	0.26	-0.203	0.471	0.371	**0.835**	0.363
	WE4	0.281	-0.175	0.265	0.095	0.213	0.485	-0.154	0.169	0.086	**0.606**	0.359
	WE6	0.239	-0.114	0.227	0.130	0.137	0.425	-0.135	0.206	0.062	**0.675**	0.308
WI	WISaf1	0.451	-0.585	0.556	-0.239	0.624	0.554	-0.512	0.185	0.239	0.326	**0.872**
	WISaf2	0.303	-0.271	0.255	0.086	0.321	0.315	-0.337	0.301	0.249	0.523	**0.595**
	WISaf3	0.474	-0.623	0.585	-0.229	0.653	0.596	-0.50	0.183	0.232	0.346	**0.886**
	WISaf4	0.504	-0.612	0.536	-0.190	0.630	0.621	-0.517	0.220	0.253	0.359	**0.885**
	WISaf5	0.499	-0.615	0.532	-0.189	0.625	0.623	-0.528	0.219	0.249	0.350	**0.869**

In addition, a more reliable criterion called the Heterotrait-Monotrait Ratio (HTMT) ratio for assessing discriminant validity was examined as Hair, Sarstedt, and Ringle (2019), Ali et al. (2018), and Hénseler et al. (2015) suggested. As seen in Table 4.12, the highest correlation is 0.85 within the conventional yardstick (Hensaler et al., 2015). Hence, the HTMT criterion displays satisfactory discriminant validity.

Table 4.12
Heterotrait-Monotrait Ratio (HTMT)

Constructs	**CF**	**MC**	**PP**	**RB**	**SCF**	**SRP**	**ST**	**SC**	**SP**	**WE**	**WI**
CF											
MC	0.761										
PP	0.547	0.684									
RB	0.269	0.294	0.230								
SCF	0.797	0.816	0.689	0.257							
SRP	0.813	0.812	0.747	0.246	0.822						
ST	0.773	0.833	0.605	0.231	0.777	0.745					
SC	0.397	0.228	0.286	0.115	0.339	0.304	0.214				
SP	0.445	0.290	0.266	0.259	0.385	0.274	0.274	0.823			
WE	0.531	0.287	0.397	0.215	0.389	0.626	0.273	0.560	0.437		
WI	0.741	0.733	0.668	0.268	0.785	0.783	0.739	0.312	0.368	0.585	

The results of the measurement model as a whole in this current study show that all the constructs reliability and validity were sufficiently achieved. Hence, supports further analysis of the structural model to test the relationships among the variables under study.

4.7.1.5 Assessment of the Formative Hierarchical Component Model

Since SMPs were used as higher-order reflective-formative, the study examines the formative hierarchical component model by considering collinearity, the weight, and the significance of the weight. According to Hair et al. (2014, p.125), "outer weights in formative measurement models should be analysed for their significance and relevance only if collinearity is not at a critical level." Therefore, collinearity issues for the second-order (SMPs) were assessed. Collinearity assessment is essential to ensure that the constructs do not measure the same factors. As presented in Table 4.13, the variance inflation factor (VIF) values for each of the constructs were less than the cut-off value of <5 (Hair et al. 2017; Hair et al., 2014), indicating that these constructs were distinct and measure different aspects of SMPs.

Table 4.13
VIF of the Second-Order Formative Construct

Constructs	**VIF**
Management Commitment	3.220
Safety Training	2.599
Safety Communication and Feedback	3.020
Safety Rules and Procedures	2.668
Workers Involvement	2.537
Safety Promotion Policies	2.029
Cooperation Facilitation	1.686

The suitability of the higher-order constructs was then evaluated based on their conceptual properties (Fattore, Pelagatti, & Vittadini, 2018; Hiar et al. 2018). Since this research used formative higher-order components, the internal consistency reliability and convergent and discriminant validity assessment are not necessary because the items for formative constructs need not be strongly/highly correlated (Henseler et al., 2009). Table 4.14 shows the formative second-order construct assessment. The bootstrapping results indicate the weights and path coefficients for each of the formative second-order constructs (Hair et al., 2011). The results show that the seven dimensions of SMPs are significantly related to SMPs.

Table 4.14
Weight and Significance of Weight for the Formative Constructs

Relationships	Std. Weight	Std. Error	t-values	p-values	Confidence Intervals (CI) LLCI	ULCI	Decision
CF -> SMP	0.370	0.099	3.743**	0.000	0.215	0.539	Significant
MC -> SMP	0.267	0.154	1.731*	0.042	0.026	0.534	Significant
PP -> SMP	0.160	0.094	1.698*	0.045	0.009	0.319	Significant
SCF -> SMP	0.322	0.142	2.264*	0.012	0.104	0.560	Significant
SRP -> SMP	0.286	0.154	1.856*	0.032	0.023	0.536	Significant
ST -> SMP	0.238	0.123	1.933*	0.027	0.039	0.428	Significant
WI -> SMP	0.482	0.124	3.895**	0.000	0.258	0.657	Significant

Note: **Significant at 0.01 (1-tailed), *significant at 0.05 (1-tailed)

4.7.2 Assessment of Significance of the Structural Model

The reliability and validity of the model were achieved after ascertaining the outer model. The subsequent phase was an evaluation of the results for the structural model (inner model). The main criteria in PLS-SEM for the structural model evaluation was the determination of coefficient (R^2), the effect size (f^2), the path coefficients significance and predictive relevance (Q^2). In the present study, a structural model involved the main effects model in which the direct relationships between SMPs and safety performance were examined and the indirect impact on the work environment was incorporated into the relationship as a mediator. Figure 4.2 shows the full structural model (indirect and direct effects). In this research, all the relationships are presented by standardised beta values. Additionally, the level of significance was set at $p<0.05$ and $p<0.01$ (1-tailed) to examine the direct relationships in the testing of the mediating effect for the structural model as well as $p<0.01$and $p<0.05$ (2-tailed).

4.7.2.1 Hypotheses of the Direct Effects

The systemic model analysis was conducted in this study to give an insight into the findings and test the hypotheses. The evaluation of the internal model began with a study of the direct relation of the independent variables to the dependent variable. The size of the path coefficients was investigated through the PLS-SEM algorithm, and the significance of the relationship was investigated in Smart PLS 3.2.8 (see Figure 4.2 below) through the PLS-SEM bootstrapping procedure. The original number of 517 was used as the number of cases, and 5,000 were used as samples for bootstrapping (Hair et al., 2013; Hair et al., 2011; Hair et al., 2012; Henseler et al., 2009).

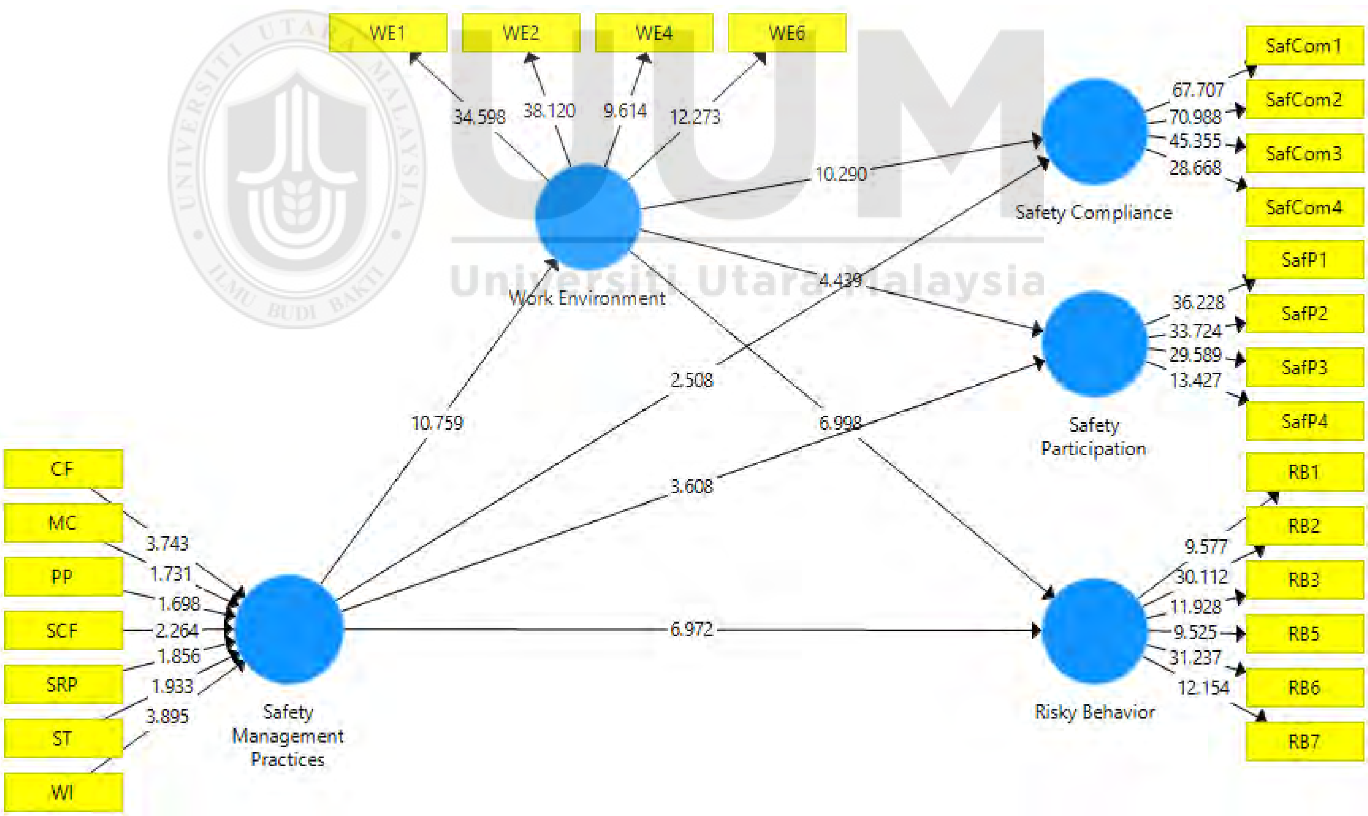

Figure 4.2
Direct Effects. Two-Stage Approach

Figure 4.2 displays the path coefficient of the dependent variables and independent variables that use the bootstrapping technique via the PLS-SEM algorithm. The results reveal that six (6) of the exogenous variables are positive for the endogenous variables, while the other one (1) is a negative coefficient. The bootstrapping results in Figure 4.2 show that the relationships among the independent and the dependent variables are significant at p<0.01. Table 4.15 also displays the path coefficients, p-values and confidence intervals.

Table 4.15
Results of Hypotheses Testing (Direct Relationships)

					Confidence Intervals CIs		
Relationships	**Std. Beta**	**Std. Error**	**t-values**	**p-values**	**LLCI**	**ULCI**	**Decision**
SMP -> SC	0.115	0.046	2.508**	0.006	0.035	0.18	Supported
SMP -> SP	0.210	0.058	3.608**	0.000	0.087	0.281	Supported
SMP -> RB	-0.384	0.055	6.972**	0.000	-0.475	-0.297	Supported
SMP -> WE	0.489	0.045	10.759**	0.000	0.398	0.553	Supported
WE -> SC	0.441	0.043	10.290**	0.000	0.371	0.508	Supported
WE -> SP	0.252	0.057	4.439**	0.000	0.149	0.331	Supported
WE -> RB	0.347	0.050	6.998**	0.000	0.246	0.414	Not Supported

Note: **Significant at 0.01 (1-tailed), *significant at 0.05 (1-tailed)

From Table 4.15 and Figure 4.2, seven direct relationships were examined. Six were significant at the 1% significant level, and one was not significant, i.e., SMPs had a significant and a positive relationship with safety compliance (p-value = 0.006, t-value = 2.508 and β = 0.115) and safety participation (p-value = 0.000, t-value =3.608 and β = 0.210) and SMPs had a negative and significant relationship with risky behaviour (p-value = 0.000, t-value = 6.972 and β = -0.384,). Also, SMPs had a positive and significant relationship with work environment (p-value = 0.000, t-value = 10.759 and β = 0.489,) Therefore, hypothesis H1, H2, H3 and H4 were supported.

On the other hand, work environment had a significant and positive relation to safety compliance (p-value = 0.000, t-value = 10.759 and β = 0.441) and safety participation (p-value = 0.000, t-value = 4.439 and β = 0.252). Therefore, hypothesis H5, H6 were supported. However, contrary to hypothesis seven, work environment had a significant and positive relationship with risky behaviour (p-value = 0.000, t-value = 6.998 and β = 0.347). Therefore, hypothesis H7 was not supported.

4.7.2.2 Assessment of Variance Explained in the Endogenous Variables

One of the criteria for evaluating the suitability of the structural model in PLS-SEM is coefficient determinant (R^2) (Hair, Risher, Sarstedt, & Ringle, 2019; Hair et al., 2012; Hair et al., 2011; Henseler et al., 2009). The R^2 value is the proportion of variation in the DV(s) that one or more predictor variables can explain (Hair et al., 2010). Following the recommendation of Falk and Miller (1992), the minimum acceptable value of R^2 is 0.10. Thus, the more the value of r is closer to one, the bigger the percentages (%) of variance explained. Furthermore, Cohen (1988) proposed another way of evaluating the R^2 value as follows: 0.02 as weak, 0.13 as moderate, and 0.26 as substantial. Meanwhile, Chin (1998) suggested that 0.19, 0.33 and 0.67 of R^2 value in PLS-SEM can be considered as weak, moderate, and substantial, respectively. Even though the value of R^2 ranges between 0 and 1, there is no consensus on the exact value. In fact, its value depends on the research context

(Hair et al., 2010). Table 4.16 provides the values of the R^2 of the endogenous variables in this research.

The research model explains 16% of the total safety participation variance, 26% of the safety compliance variance, 14% of the total variation in risky behaviour, and 24% of the total variance in the work environment, as presented in Table 4.16. This suggests that the SMPs and work environment collectively explain 16% of the total variance in safety participation, 26% in safety compliance, 14% of the total variance in risky behaviour, and 24% of the total variance in the work environment. Additionally, SMPs explain 24% of the total variance in the work environment. Hence, following the criteria of Cohen (1988), the R^2 values of 26%, 16%, 14%, and 24% for safety compliance, safety participation, risky behaviour, and work environment, respectively, in this study were considered as weak to substantial.

Table 4.16
Coefficient of Determination (R^2)

Latent Variables	**R^2 (Variance Explained)**	**R^2 Percentage**
Safety Compliance	0.257	26%
Safety Participation	0.159	16%
Risky Behaviour	0.137	14%
Work Environment	0.239	24%

4.7.2.3 Assessment of the Effect Size (f^2)

According to Chin (1998), effect size (f^2) relatively explains the effect of a specific or particular independent variable (IV) on the dependent variable (DV) by mean changes in the (R^2). Cohen (1988) described f^2 "as the degree to which the phenomenon is present in the population” or "the degree to which the null hypothesis is false." (p. 9). The following formula is used to express f^2 (Cohen, 1988).

$$\text{Effect size: } f^2 = \frac{R^2 \text{ included} - R^2 \text{ Excluded}}{1 - R^2 \text{ Included}}$$

Whereas:

f^2 = effect sizes
R^2 included = R-square included
R^2 excluded = R-square excluded
1 = constant

R-included is the R^2 value of the dependent variable when a particular independent variable is included. R-excluded is the R^2 value of the dependent variable when a specific or particular independent variable is excluded from the model. For F^2 values, according to Cohen (1988), 0.35 is described as as large, 0.15 as medium, and 0.02 as small. Unlike in Smart-PLS 2.0, calculating the variables effect size requires the use of the above formula manually. Smart-PLS 3.2.8 simplified it by automatically calculating the effect size. Since the current study used Smart-PLS 3.2.8, the results of the effect sizes are directly described in Table 4.17.

Table 4.17
Effect Size (F^2)

Relationship	**F^2 Value**	**Size**
SMP -> RB	0.130	Small
WE -> RB	0.106	Small
SMP -> SC	0.013	Small
WE -> SC	0.199	Medium
SMP -> SP	0.040	Small
WE -> SP	0.057	Small
SMP -> WE	0.314	Medium

As presented in Table 4.17, the effect sizes for the SMPs on safety compliance, safety participation, risky behaviour, and work environment were 0.013, 0.040, 0.130, and 0.314, respectively. Thus, the effect sizes based on Cohen's (1988) rule on this exogenous variable on criterion variables can be deemed to have small, small, small, and medium effects, respectively. Moreover, Table 4.17 also shows that the impact sizes for the work environment on safety compliance, safety participation, and risky behaviour were 0.199, 0.057, and 0.106, respectively. Equally, based on the guideline provided by Cohen (1988), the results propose that the effect sizes of this exogenous variable on these three endogenous variables can be considered as a medium, small and small, respectively. It should be noted that a low f^2 does not denote a significant effect (Limaye, Hirti & Chen, 2001). It only shows the contribution of each independent variable to the level of R^2 value.

4.7.2.4 Construct Cross-Validated Redundancy (Predictive Relevance)

In this study, to examine the predictive relevance of the model (Q-square), the procedure of Stone-Geisser blindfolding was applied (Stone, 1974; Geisser, 1974). The "blindfolding procedure is only applied to endogenous latent variables that have a reflective measurement model operationalisation" (Sattler, Völckner, Riediger & Ringle, 2010, p. 320). Q^2 was calculated in this study in SmartPLS 3.2.8 using the blindfolding procedure with an omission distance of 7 (Tenenhaus, Vinzi, Chatelin, & Lauro). If a Q^2 value of an endogenous construct for a particular dependent (s) latent variable is more than zero, its explanatory latent variable displays predictive relevance (Chin, 1988). Hair et al. (2014) and Chin (1998) set three (3) criteria for evaluating Q^2. A Q^2 value of 0.35 shows that the model has high predictive relevance; Q^2 value of 0.15 demonstrates that the model has medium predictive relevance. In contrast, a Q^2 value of 0.02 indicates that the model has small predictive relevance for a specific endogenous variable.

In Table 4.18 in this current study, the column labeled 1-SSE/SSO displays the results of the Q^2 test for all endogenous variables, which is above zero for safety participation (Q^2=0.087), safety compliance (Q^2=0.163), risky behaviour (Q^2=0.070) and work environment (Q^2=0.125), showing predictive model relevance (Henséler et al., 2009; Chin, 1998).

Table 4. 18
Predictive Relevance of the Model (Construct Cross-Validated Redundancy)

Constructs	**SSO**	**SSE**	**Q^2 (=1-SSE/SSO)**
Safety Compliance	2,068.00	1,730.39	0.163
Safety Participation	2,068.00	1,887.91	0.087
Risky Behaviour	3,102.00	2,885.23	0.070
Work Environment	2,068.00	1,810.39	0.125

Having presented the results of the direct effects and the related test of hypotheses, the effect size (f^2), coefficient determinant (R^2), and predictive model relevance (Q^2), in the next part, the analysis of mediating effects and the intending test of hypotheses will be presented.

4.8 TESTING FOR MEDIATION

After assessing the direct effect between exogenous and endogenous variables, the study went further to test the relationships through the role of mediator (indirect effect). In evaluating the mediation effect, many statistical methods are available to make conclusions and confidence intervals (CIs), such as the Monte Carlo approximation to the distribution of the product DPR (Preacher & Selig, 2012), an analytical approximation to the DPR (MacKinnon, Fritz, Williams & Lockwood, 2007), resampling/bootstrapping (Shrout & Bolger, 2002), and asymptotic/traditional (Baron & Kenny, 1986; Sobel, 1982). These approaches have their own merit/demerit in terms of software availability, interpretation, empirical performance and computational ease (Falk & Biesanz, 2016). According to Falk and Biesanz (2016, p.11), "reliance on traditional methods (e.g., Sobel's test) likely results in many indirect effects that go undetected due to statistical power that is too low". Therefore, in the present study, a bootstrapping approach (Hair et al., 2019; Aguinis et al., 2017; Preacher & Hayes, 2008; Hair et al., 2014) was used to test for mediation. This approach is preferred for mediation analysis when using Smart-PLS.

Table 4. 19
Results of Hypotheses Testing (Mediation)

					Confidence Intervals CIs		
Relationships	**Std. Beta**	**Std. Error**	**t-values**	**p-values**	**LLCI**	**ULCI**	**Decision**
SMP -> WE -> SC	0.216	0.028	7.650	0.000	0.166	0.278	Supported
SMP -> WE -> SP	0.123	0.028	4.346	0.000	0.074	0.184	Supported
SMP -> WE -> RB	0.170	0.033	5.197	0.000	0.111	0.237	Not Supported

Note: **Significant at 0.01 (2-tailed), *significant at 0.05 (2-tailed)

Form the results in Table 4.19 using the bootstrapping procedure, work environment intervenes in the relationship between SMPs and safety compliance β = 0.216, t-value = 7.650 & p-value = 0.000) and SMPs and safety participation (β = 0.123, t-value = 4.346 & p-value = 0.000). However, it did not mediate the relationship between SMPs and risky behaviour (β = 0.170, t-value = 5.197 & p-value = 0.000), therefore, H8, H9 are supported, and H10 is not supported.

4.9 SUMMARY OF FINDINGS

Having completed the presentation of the findings of both the direct and mediating effects in the earlier sections, Table 4.20 shows the summary of the results for all ten hypotheses tested.

Table 4. 20
Summary of Hypotheses Testing

SN	Hypo	Statements	Findings
1	H1	SMP -> SC	Supported
2	H2	SMP -> SP	Supported
3	H3	SMP -> RB	Supported
4	H4	SMP -> WE	Supported
5	H5	WE -> SC	Supported
6	H6	WE -> SP	Supported
7	H7	WE -> RB	Not Supported
8	H8	SMP -> WE -> SC	Supported
9	H9	SMP -> WE -> SP	Supported
10	H10	SMP -> WE -> RB	Not Supported

4.10 SUMMARY OF THE CHAPTER

This chapter presents the statistical findings of the current study, whose primary objective is to examine the relationship between SMPs and safety performance through the role of the work environment. In this chapter, the model assessments substantiate sufficient reliability and validity of the study constructs. A total of seven directly formulated hypotheses were tested: three between SMPs and safety performance outcomes, one between SMPs and work environment, and three among work environment and safety performance outcomes. Of the seven (7) direct relationships that were tested, six (6) hypotheses were supported, while one (1) was not supported. Additionally, three (3) hypotheses were developed to evaluate the mediating effect of the work environment in the relationship between SMPs and safety performance outcomes. Of the three mediating hypotheses, only two were supported, while one (1) was not supported. The next chapter discusses the results, the implications of the research, the limitations study, future research suggestions, and the conclusion.

CHAPTER FIVE

DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

5.1 INTRODUCTION

Chapter Five explains the study results in addressing the research objectives and answering the research questions. The following sections are included in this chapter. The study results are recapitulated in section two. Segment three introduces a discussion of the outcomes with reverence to the research hypotheses provided and links the findings of this current study to previous safety performance research. The theoretical, practice and methodological contributions of the research are described in section four, while the limitations of the study can be found in section five. Further, the study includes recommendations for future research in section six. Finally, section seven affords a general conclusion to the research.

5.2 RECAPITULATION OF THE STUDY'S FINDINGS

The principal objective of this study was to examine the level of safety performance among nurses in the Jordanian healthcare setting. The study mainly investigated the influence of the facets of SMPs, i.e., safety training, management commitment to safety, worker's involvement, safety communication and feedback, safety promotion policies, safety rules and procedures, and cooperation facilitation on nurses' safety performance, in particular, with regards to safety participation, compliance, and risky behaviour. Therefore, the role of mediator in these relations was investigated in the work environment.

The direct relationships between SMP and safety compliance, SMP and safety participation, SMP and risky behaviour, and SMP and work environment were examined. This includes the direct relationship between work environment and safety compliance, work environment and safety participation, and work environment and risky behaviour. The findings showed that six hypotheses were supported from seven hypotheses proposed. The findings from PLS path modelling displayed a significant and positive relationship between SMPs to safety compliance, safety participation, and risky behaviour. In the same vein, safety compliance and safety participation were positively and significantly associated with the work environment. In contrast, work environment failed to predict risky behaviour in this research.

Concerning the work environment as a mediator on the association between SMPs and safety compliance, safety participation and risky behaviour, the findings established empirical support for only two hypotheses. Notably, work environment was found to mediate the association between SMPs and safety compliance and between SMPs and safety participation. However, work environment did not mediate the relationship between SMPs and risky behaviour.

5.3 DIRECT EFFECT BETWEEN SMP, WORK ENVIRONMENT, AND SAFETY PERFORMANCE

This chapter is designed according to the research questions and objectives in the subheadings of the discussion section. In particular, the first part discusses safety levels among nurses in the healthcare setting in Jordan. Second, a discussion on the direct impact on the dependent variable (safety participation, safety compliance, and risky behaviour) from the independent variables (SMPs) are highlighted. Lastly is the mediating effect of the work environment on the relationship between SMPs and safety compliance, safety participation, and risky behaviour.

5.3.1 The Safety Performance Level among Nurses in Irbid Public Hospitals

In this research, an assessment of Jordan public health hospitals in Irbid, Jordan, was made by the first research question. Safety performance is “safety-related actions or behaviours that workers exhibit in almost all types of work to promote their safety and the safety and health of others” (Barke & Signel, 2010, p. 3). Safety performance includes safety participation, safety compliance, and risk behaviour as mentioned previously.

As shown by Neal et al. (2000), while compliance with safety applies to work activities that concentrate on meeting, using personal protective equipment, and maintaining safe standard work practices, participation in safety relates to behaviours which do not actually contribute to the safety of workers themselves, but to the protection of coworkers and the general workplace. Alternatively, as Martinez-Corcoles et al. (2010) posits, safety participation specifically involves voluntary activities like assisting co-workers with matters of safety, attending safety meetings, and others (Lu & Yang, 2010). Risky behaviour is thus used to denote behaviours which are a deviation from standard organisational practices, procedures and expectations, which are likely to cause adverse consequences (Martinez-Corcoles et al., 2013).

Data were collected and analysed from nurses on a 5-point Likert scale, and descriptive analysis was performed to compute mean safety participation, safety compliance values, and risky behaviour. The mean value for safety compliance, as shown in Table 4.9, was 3.93, which is near to the four-scale, i.e., "agree". However, the mean safety participation value was 3.91, which is less than the mean of safety compliance value and 2.6178 for risky behaviour.

These results suggest that the safety performance level of public health hospitals, in Jordan, and precisely in Irbid Governorate, is satisfactory when compared to other related industries and with the relative level of exposure to occupational risks. For example, Martinez-Corcoles et al. (2013) reported high mean scores and standard deviation for safety compliance at 4.56, safety participation at 4.10, and risky behaviour at 1.47 among employees from two nuclear power plants in Spain. Mashia et al. (2017) reported mean scores for safety compliance at 3.26 and safety participation at 3.97, respectively, in an Abuja secondary health facility in Nigeria. In the oil and gas sector in Norway, Dahl and Olsen (2013) reported a mean score of 4.77 for safety compliance.

Al-Bsheish et al. (2019) reported mean scores of 3.82 and 3.93 for safety compliance and safety participation, respectively, in an intensive care unit, where nurses at eight Jordanian hospitals were selected by cluster sampling. Additionally, in a significant accident hazard unit in India, Vinodkumar and Bhasi (2010) reported mean scores for safety compliance at 3.88 and safety participation at 3.80, respectively.

In comparing the results of the above studies with the current study, it can be seen that a satisfactory level of safety behaviour has been achieved. A reasonable reason to infer the reported grades is a high level of safety awareness among workers. It is noted that hospitals are known for implementing the best result-oriented safety practices, procedures, and protocols (Campione & Famolaro, 2018), but the occurrence of potential accidents and associated deaths cannot be ruled out. Furthermore, a look at the demographic statistics showed that the majority of the respondents had more than four years of experience in the nursing field (refer to Table 4.8). The literature has also demonstrated a positive correlation between experience and safety performance (Zhang & Wu, 2014; Haas, Eiter, Hoebbel, & Ryan, 2019). Thus, low-experienced employees who are less familiar with their surroundings are, therefore, more likely to receive injuries during their first few years at work (Haas et al., 2019).

Furthermore, in terms of age, the majority of nurses in this study were above 30 years of age (refer to Table 4.8). The literature has reported a positive correlation among workers' age and safety performance (Siu, Phillips, & Leung, 2003; Pereira, Hermann, Han, & AbouRizk, 2018). In essence, older employees are more experienced and mindful in performing their duties at work. Hence, this is more likely to decrease their risk at work because they are always adhering to safety procedures and rules (Siu et al., 2003).

5.3.2 Main Effect on the Relationship Between SMPs and Safety Compliance

Organisations tend to adopt SMP systems or behaviour-based system approaches to manage their safety functions in an attempt to achieve performance excellence. A safety management system consists of programs, processes, policies, and procedures for which there is a formal function overseeing their development, implementation, and ongoing administration. The findings of this study disclosed a significant and positive relationship among the SMPs and safety compliance for nurses (see Table 4.16).

On safety compliance, it was hypothesised that SMPs would positively affect safety compliance (H1). This indicates that hospitals with high SMPs would achieve higher compliance; well-trained nurses would have sufficient knowledge and skills in terms of safety. Hence, nurses would be more likely to exhibit a high level of safety compliance at work because they understand what are considered as good safety practices. They are also aware of the negative impact that they may have when they participate in an unpleasant safety performance at the expense of adequate safety compliance (Neal et al., 2000; Kwon & Kim, 2013; Pilbeam, Doherty, Davidson, & Denyer, 2016; Homayounfar, Eshkiki, & Sedaghat, 2018; Kim et al., 2019).

A possible reason for this may be attributed to the finding that adherence to SMPs' rituals and procedures help nurses acquire relevant knowledge and safety skills to carry out their work in following the hospitals' safety measures. Nurses should be trained on the necessary safety training procedures, which also enhance their understanding of the importance of safety practices in their work setting (Neal et al., 2000). Therefore, safety compliance capabilities are most likely to be higher in the workplace.

Another possible justification for this is due to the size of the hospitals in Jordan. It is worthy to note that all of the hospitals in this study are secondary hospitals. These hospitals are large and have adequate resources compared to primary hospitals. Having said that, secondary hospitals can ensure adherence to strict SMPs in terms of safety to the nurses to improve their safety compliance. This is supported by Gressgård (2014), who reported that large organisations have superior safety compliance because they have enough resources to invest in SMPs programs.

Furthermore, SMP systems are planned and implemented for the detection, assessment, monitoring and reduction of safety risks and the development of many defenses that prevent accidents (Batalden & Oltedal 2018). However, both the development and the implementation of these safety management systems are flawed because accidents continue to happen, probably because these systems cannot predict and control all work situations. Because of the restrictive, controlled and complicated structures of such systems, they tend to adjust slowly to changing circumstances or uncertainty.

Also, where work is carried out, the ability of human factors to exacerbate the possibility of committing an error is not farfetched and is connected to the safety management practice system. This is in line with the assertion by Gershon et al. (2000), Bahari and Clarke (2013), Chen and Chen (2014), Wachter and Yorio (2014), and Subramaniam et al. (2016) that adequate SMPs intervention can help to improve safety compliance in hospitals because employees are knowledgeable and skillful in handling safety matters at the worksite.

5.3.3 Main Effect on the Relationship Between SMPs and Safety Participation

SMPs focus on human performance and are regarded as tools that organisations can utilise to boost the likelihood that workers will make safe choices in their work systems and processes and, in turn, will reduce the possibility of incidents that can lead to losses (Makin & Winder, 2008). The result of this research found a significant and positive relationship among SMPs and nurses' safety participation (see Table 4.16).

Dedobbeleer and Béland (1991) and Griffin and Neal (2000) stated that safety participation can be improved by applying a participatory safety approach. Notably, in the design of safety measures, employees have the opportunity to share their perspectives on safety matters. Therefore, all regulations and rules regarding safety aspects are more likely to be participative.

On safety participation, it was hypothesised that SMPs would positively relate to safety participation (H2). Safety participation, which is another core component of safety performance, denotes employees' participation in voluntary activities which might not merely contribute to the safety of their employees, but to the safety and health of other employees (Neal & Griffin, 2006; Lu & Yang, 2011). It was found that SMPs have a positive and significant relationship to safety participation. That is, employees' participation in safety-related matters in the workplace is mostly dependent on their SMPs perceptions. Put in another way, the participation of employees in ensuring the safety of their colleagues and the workplace at large is dependent on the efficiency of the SMPs of the workplace.

For example, Vinodkumar and Bhasi (2010), Homayounfar et al. (2018), Lyu et al. (2018) and Chen and Chen (2014) reported positive and significant relations among safety SMPs and safety participation. In another study by Subramaniam et al. (2016), it was reported that some SMP components were significantly related to safety participation. In other studies like Mearns et al. (2003), Wachter and Yorio (2014), and Razali (2018) all facets of SMPs were reported to be significantly associated with safety performance. Other studies in this regard are further noted (e.g., Homayounfar et al., 2018; Kim et al., 2019; Barbarnealli et al., 2015; Keffane, 2015).

One plausible reason may be attributed to hospital size. Given that these hospitals are secondary facilities, the management may actively encourage the involvement of nurses in giving their input and feedback on safety aspects in the hospitals. Large hospitals have more interactive systems that incorporate workers into safety aspects (Dedobbeleer & Béland, 1991; Donald & Young, 1996). This would eventually lead to a higher level of safety participation among nurses as they feel that their ideas are taken into consideration by the management. This is congruent with the study done by Peterson et al. (2016) which reported that larger hospitals allow a high level of participation from employees in tackling safety issues.

More importantly, when employees are involved in activities that stimulate safety in the place of work and assist co-workers in safely doing their jobs, they are more predisposed to comply with all the safety practices in hospitals. The same idea shared by Vredenburgh (2002) was that if nurses are involved in regular safety practices, they are more likely to apply the methods that they have agreed upon in carrying out the necessary procedures.

5.3.4 Main Effect on the Relationship Between SMPs and Risky Behaviour

SMP systems include techniques that managers use for safety management (Flin, Mearns, O'Connor, & Bryden, 2000). These methods include actions like designating safety officials (Phillips et al., 1993; Zohar, 1980), creating safety committees (Ostrom, Wilhelmsen, & Kaplan, 1993; Zohar, 1980), enacting policies, or developing prevention strategies (Diaz & Cabrera, 1997).

Wachter and Yorio (2014) define SMPs as "a safety management system consists of programs, processes, policies, and procedures for which there is a formal function overseeing their development, implementation, and ongoing administration. They are usually codified in writing and issued as approved documents that specify functions, roles, responsibilities, accountabilities and authorities."

A safety management system can be understood as a set of policies, practices, procedures, roles, strategies, and functions that are associated with safety (Vinodkumar & Bhasi 2010; Kennedy & Kirwan, 1998). Safety management systems are mechanisms that are integrated into an organisation (Labodová, 2004) and are designed to control the hazards that can affect workers' health and safety. At the same time, they permit a firm to comply with the current legislation. For this system to be effective, employees must participate. In other words, the system must promote positive SMPs. To achieve this, steadfast commitment and support are required from all managers in a firm (Yorio & Wachter, 2014; Cornelissen et al., 2017; Bayram & Ünğan, 2018).

Risky behaviour has been identified as a critical component of safety behaviour but yet is gravely under-researched (Martinez-Corcoles et al., 2013). Specifically, it denotes behaviours which are a deviation from standard organisational practices, procedures and expectations, which are likely to cause adverse consequences (Martínez-Córcoles & Stephanou, 2017). It was hypothesised that SMPs would predict lower risky behaviour. This hypothesis was supported by some plausible reasons.

Conceptually, when employees recognise that the management prioritises safety in the workplace (Hassan, Ying, Ahmad, & Ilyas, 2019) or acts in ways that promotes safety (Christian et al., 2009), they are far less likely to participate in risky behaviour (Boask et al., 2013). On the other hand, when workers perceive aspects such as management systems, safety policies and practices to be applicable, efficient and prioritised above competing for organisational requirements, they are less likely to be involved in risky behaviours (Namian et al., 2016; Martenez-Córcoles et al., 2014).

Based on the above submissions, it would have been plausible to conceptually and/or theoretically accept H_3. A plausible explanation can thus be offered for the present result. Managerial behaviour provides clues on the modus operandi of workplace norms and the attendant behaviours are likely to be maintained, appreciated or rewarded, which informs the workers' perception of the safety climate (Morrow et al., 2010). Concisely put, the more employees perceive that an organisation accords safety the attention it deserves (Naveh et al., 2007; Christian et al., 2009) and shows same through the behaviours of the workers' immediate supervisors, the less likely the workers are to engage in risky behaviours. Consequently, though risky behaviours are noted to have the potential of causing adverse consequences (Martinez-Corcoles et al., 2013), the presence of factors that shape safety in SMPs' perceptions does guarantee that employees would no longer take risks or behave in risky ways.

Furthermore, it reveals that the presence of factors that are supposed to reduce risk-taking behaviours may have helped to ensure the safety of employees and by extension the workplace, thus leading to the avoidance of accidents (Huang et al., 2012; Cigularov et al., 2013; Dahl & Olsen, 2013).

The present study hypothesised a significant and negative relationship between SMPs and risky behaviour (H_3). The hypothesis received empirical support. By implication, the perception among nurses in Jordan is based on the SMP culture, which is positively shaped to reduce their risky behavioural tendencies. Put in another way, positive SMPs, which is a *sine qua non* for reduced risky behaviours, is positively shaped by the SMPs nurtured and practiced by the nurses.

By relying on initial theoretical positions of the importance of SMPs in shaping and/or reducing risky behaviour (Fernández-Muñiz, Montes-Peón, & Vázquez-Ordás, 2009; Wachter & Yorio, 2014), in view of its distinct characteristics, is also noted as capable of reducing risky behaviour (Frazier, Ludwig, Whitaker, & Roberts, 2013; Kaynak, Toklu, Elci, &Toklu, 2016). Consequently, the result of H3 as empirically supported is consistent with some related studies. For example, Frazier et al. (2013) reported a statistically significant relation between SMPs and risky behaviour. Yorio and Wachter (2014) also reported a negative association between SMPs and total recordable injury and accident cases (risky behaviour). Similarly, Wachter and Yorio (2014) reported on the influences of SMPs on reducing the possible rate and level of accidents (risky behaviour). Fascinatingly, the finding of Wachter and Yorio (2014) is in a work setting similar to the present study. Some plausible explanations can be adduced to this finding.

The relationship between SMPs and a nurse's risky behaviour is negative, possibly because higher SMPs will lead to reduced risky behaviour on nurses. Specifically, when nurses perceive an SMP disposition that is committed to their safety, such as providing necessary protective appliances, instruments and equipment, they will reciprocate by engaging in reduced risky behaviour (Hsu et al., 2012).

Another explanation of this finding is probably because the management provides adequate safety resources at the hospitals. Previous research by Vinodkumar and Bhasi (2010) and Mearns, Hope, Ford and Tetrick (2010) have also been reported that workers are more likely to display reduced risky behaviour in organisations investing heavily in SMPs.

Another plausible possible reason is attributed to the organisational tenure. The respondents reported an average of 4 to 8 years of employment with their current employer (refer to Table 4.8). Such a period of employment is adequate for them to assess the level of commitment given by the management in terms of safety aspects (Beus, Payne, Bergman, & Arthur, 2010). In the previous work of Beus, Bergman, and Payne (2010), it was reported that employees with a longer tenure of employment are more likely to develop a positive perception towards the management level of commitment towards safety.

5.3.5 Main Effect on the Relationship Between SMP and Work Environment

According to some studies, SMPs are becoming a critical key to the improvement of the work environment (Hohnen & Hasle, 2018; Torp & Moen, 2006). For instance, safety management is represented as an essential part of the construction management of building engineering in China, which has a pleasant work environment (Lu, Li, Zhou, & Deng, 2015).

The study hypothesised that SMPs would positively relate to the work environment (H4). In general, the work environment refers to the environment around the person where the individual interacts with and deals with several people in the social and professional environment (Singh & Dhaliwal, 2019). For this study, the term work environment was used to refer to the context of a healthcare organisation as "organisational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002, p. 178). Within this definition, hazards do not always result in accidents, but they lurk in work environments, waiting for the correct combination of circumstances to occur. The higher safety integration there is in SMPs to identify safety hazards, the more positive the environmental climate.

Organisational policies, procedures, and practices commonly address and assess aspects of the work environment (Neal & Griffin, 2006; Oakman & Bartram, 2017). Thus, the impact of SMPs on the work environment is significant (Torp & Moen 2006). In other words, faith in and the value of work-related SMPs leads directly to the perception among nurses that their worksites are safe. Towards this viewpoint, it is necessary to understand why SMPs contribute to the work environment. Consequently, safety-related authorities must expend their energy to improve the work environment among the employees.

This study was conducted in a context of matching findings from earlier studies relating to the relationship among SMP factors and work environment. Such contrasting findings are possibly due to particular characteristics of the Jordanian setting, in which the majority of programs relating to occupational safety and health are governed. Government-led work environment health and safety programs, as well as promotional campaigns, can be efficient in fostering employee interest and improving their knowledge with a sufficient budget, which may increase the ability of these programs to foster improvements in SMPs, leading to an improved work environment.

Another plausible reason for supporting this hypothesis is probably the fact that factors such as initiatives to reduce or relieve burnout, the engagement of professionals in decision-making referring to care for patients, professional recognition, the promotion of nursing executives, and the approach to learning through failures have all contributed to the development of a favourable working environment positively (El-Jardali et al., 2011).

5.3.6 Main Effect on the Relationship Between Work Environment and Safety Compliance

Ajala (2012) believed that a work environment is a man's immediate surroundings that he manipulates for his existence. Wrongful manipulation introduces hazards that make the environment unsafe and adversely impact the productivity rate of a worker. Vredenburgh (2002) and Clarke (2006) found that work environment impacts how employees in an organisation interact and perform tasks. The hospital environment is an aspect of the work environment that directly affects the employee and subtly changes interpersonal interactions, performance, and productivity. This is because the characteristics of a meeting for a group have consequences concerning productivity and satisfaction levels. The workplace environment is a crucial factor in maintaining the level of employee performance in today's business world because today's workplace is different, diverse, and continually changing.

The emphasis on supportive work environments in clinical settings is on ensuring patient safety, encouraging nurse recruitment and retention, and enhancing nursing practice quality (Brady, 2010). According to Disch (2002), a work environment can be described as "a work environment in which policies, procedures, and systems are designed to allow employees to achieve organisational objectives and personal satisfaction in their work" (p. 3). This is also described as "the organisational characteristics of a work setting that facilitate or constrain professional nursing practice" (Lake, 2002). Healthcare organisations' environment has been described as a determinant of healthcare professionals' well-achievement of patient safety (Goldhamer et al., 2009). The nursing environment is complicated and includes guiding practitioners to provide care and monitor the environment in which this kind of care is delivered that permeates and maintains business relations (Ebright, 2015).

The study of the features of such an environment is the current topic of national and international research that aims to evaluate the environmental impact on patient safety and specialist well-being. Notably, hospital environments with an improved working environment have positive institutional indicators like better retention of qualified professionals, higher job satisfaction (Aiken et al., 2013) and residence intention (Al-Hamdan, Manojlovich & Tanima 2017) to enhance healthcare quality (Zhang et al., 2014). The nursing staff can recognise near-misses related to medication administration in environments that support professional practice (Flynn et al. 2012).

On safety compliance, it was hypothesised that the work environment would positively relate to safety compliance (H5). A possible reason for this is attributed to the fact that a pleasant working environment helps nurses to acquire relevant knowledge and safety skills to carry out their work in line with the hospital safety provisions. A friendly working environment also enhances the understanding and importance of safety practices in their workplace (Neal et al., 2000). Consequently, safety at work is more likely to be enforced.

Another plausible reason for this result is that fostering safety compliance is possible through the provision of an adequate work environment (Neal et al., 2000). These efforts could permit an organisation to help employees address the physical work hazards that exist in the work environment that are either embedded in core job tasks or which are not under the control of the organisation. This aid could decrease the need for avoidance coping and could protect healthcare workers, organisations, and patients from the negative aftermath of bad compliance in a healthcare environment.

5.3.7 Main Effect on the Relationship Between Work Environment and Safety Participation

The results of this study have shown that the work environment and safety participation were significant and positive relationships (see Table 4.16). By being motivated to better understand how the working environment performs, the working environment has found that the work environment for the nurse has a positive relationship with participation in safety. Improved nurses ' safety participation has been linked to positive perceptions of the nurses' working environment.

On safety participation, it was hypothesised that the work environment would positively relate to safety participation (H6). Safety participation, which is another core component of safety performance, denotes employees' participation in voluntary activities that may not necessarily contribute to their individual safety and health as employees, but to the safety and health of other employees (Neal & Griffin, 2006; Lu & Yang, 2010). The work environment was found to have a positive and significant relationship with safety participation. That is, employees' participation in safety-related matters in the workplace is mostly dependent on their work environment perceptions. Put in another way, the participation of employees in ensuring the safety of their colleagues and the workplace at large is dependent on how efficient, safe and risk-free the working environment of a workplace is.

The findings of this study support enhancing the work environment of nurses to improve their capacity to increase nurse's safety participation and decrease the incidence of unsafe safety hazards and risks. Nurses must acquire positive work environment determinants, including opportunities for personal and professional development, and goals sharing components to reduce environmental risks and hazards. Clearly, the improved safety participation of nurses will lead to a better working environment. Nurses need to promote better nursing work environments for all healthcare workers, as well as among nurses, to support the complete treatment provided by nurses in a complex healthcare setting.

One plausible reason may be attributed to hospital size. Given that these hospitals are secondary facilities, the management may actively encourage the involvement of nurses in giving their input and feedback on safety aspects in the hospitals. Large hospitals have more interactive systems that incorporate workers into safety aspects (Dedobbeleer & Béland, 1991; Donald & Young, 1996). This would eventually lead to a higher level of safety participation among nurses as they feel that their ideas are taken into consideration by management. This corresponds to the recent study by Flanagan et al. (2016) who reported that larger hospitals to allow a high level of involvement from employees in tackling safety issues.

More importantly, when employees are involved in activities on safety participation, they perceive that the management values their inputs. Therefore, they are more likely to comply with all the conditions for the working environment in the hospitals. Vredenburgh (2002) and Neal and Griffin (2006) also shared the same notion that if nurses are involved in a positive working environment, they are more likely to engage in improving safety participation.

5.3.8 Main Effect on the Relationship Between Work Environment and Risky Behaviour

In the current study, it was hypothesised that the work environment will negatively relate to risky behaviour (H7). This hypothesis was not supported in essence. Risky behaviours are acts that increase the likelihood of an accident occurring (Martínez-Córcoles & Stephanou, 2017). Ramanujam and Goodman (2003) noted that risky behaviours are a move from regular organisational practices, processes, and expectations that do not necessarily lead to instantaneously adverse penalties; they create circumstances that make these consequences more likely to create a situation that they described as latent errors (Martínez-Córcoles et al., 2013; Richmond, 2014). Thus, it focuses on the role of an individual in the prevention of the risk that could happen. A reduction in risky behaviour leads to proper risk management practices and organisational performance as a whole.

The results have shown that the working environment and the risky behaviour of nurses have a significant positive relationship (refer to Table 4.16). Hence the hypothesis was rejected. The study was conducted to understand better how the work environment of the nurse was positively associated with risky behaviour. Positive perceptions of the work environment of nurses have been associated with increased risky behaviour. This finding is inconsistent with other risky behaviour studies (Elmoujaddidi & Bachir, 2019).

The study's findings did not support the practical implementation of enhancing the work environment of nurses to improve the capacity of nurses to minimise risky behaviour and minimise the occurrence of unsafe hazards and threats to safety. Work environment factors such as staffing resources and nurse quality of care foundations are core components that nurses need to address to reduce environmental risks and hazards. Still, the findings from this study revealed that this outcome did not meet the expectations required and, therefore, did not support it. The work environment, in this case, did not mitigate the risky behaviour among nurses working in Jordanian hospitals. Nurses should promote a better working environment for all healthcare workers. This study will help the comprehensive required care in a complicated healthcare environment and achieve a level of reduced risky behaviour.

5.3.7 Mediating Effect of Work Environment on the Relationship Between SMP and Safety Performance

The present study conceptualises SMPs as a unidimensional construct. To the knowledge of the researcher, few studies have been done within the conceptual framework examined in the present study.

It was hypothesised that work environment mediates the relationship between SMPs and safety performance (safety compliance, safety participation and risky behaviour). The hypotheses were developed accordingly (H_8 – H_{10}) because quite a limited number of studies have considered work environment as a mediator in the SMPs and safety performance relationship. Characteristically, the possibility of work environment to be considered as a mediator within the scope of this study is predicated upon related extant theoretical underpinnings and submissions (Ashraf, 2019; Imran, Fatima, & Zaheer, 2012; Lee & Brand, 2005; Singh & Dhaliwal, 2019). Unfortunately, little in terms of research has been done. As shown in the previous chapter and specifically in Table 4.20, of the three hypotheses developed based on the section in the discussion, two were supported and one was not supported. The hypothesis was rejected because it was not statistically significant. The hypotheses accepted were based on the results from the analysis and the implications explained the basis of their individual merits.

5.3.9 Mediating Effect of Work Environment on the Relationship between SMP and Safety Compliance

The role of the work environment as a mediator in the relationship between SMPs and safety compliance (H_8) received empirical support. The hypothesis means that SMPs have a direct effect on safety compliance and the work environment has an indirect impact on safety compliance. Available empirical underpinnings attest to the significant positive association between SMPs and safety compliance (e.g., Bahari & Clarke, 2013; Smith-Crowe, Burke, & Landis, 2003; Dedobbeleer & Béland, 1991; Gershon et al., 2000; Huang et al., 2006; Kao, Stewart, & Lee 2009) and work environment and safety compliance (Lee & Kim, 2013; Hammer et al., 2016; Ahn et al., 2018).

Hence, the working environment is well-positioned theoretically and conceptually to mediate the relationship between SMPs and safety compliance. It goes to reveal a scenario that hospitals with high SMPs would achieve high safety compliance. With adequate knowledge, well-trained nurses would have sufficient knowledge and skills in terms of safety. Hence, nurses are more likely to have a higher level of safety compliance at work because they understand what is considered as functional safety. This maybe the case of the respondents of the current research. Findings show that they are also aware of the negative consequences of unpleasant safety at the expense of adequate safety compliance.

The hypothesis means that SMPs have a direct effect on safety compliance and work environment has an indirect impact on safety compliance. In SMPs and work environment literature, notable empirical underpinnings attest to the significant positive association between SMPs and work environment, and by extension safety behaviours (Wachter & Yorio, 2014; Kim et al., 2019; Manapragada, Bruk-Lee, Thompson, & Heron, 2019; Vinodkumar & Bhasi 2010). Similarly, it is therefore plausible to posit that the results of this research based on H8 are consistent with the above studies. As employees perceive a greater safety integration as well as propensity of SMPs to identify safety hazards, the more positive the safety climate then becomes.

Fascinatingly, the effect of SMPs on the work environment is substantial. That is to say, the belief in and relevance of work-related SMPs leads directly to the perception among nurses that their worksites are safe. Against this backdrop, it is crucial to understand how this result consequently leads to improved compliance with the safety policies, which is the likely situation noticed by the present study respondents. Little studies on the link between work environment and safety performance have been done in the area. However, fewer studies investigated the relation between work environment quality and SMPs or safety compliance. Empirical analysis supposed that a conducive work environment is crucial to retain talented nurses in the organisation. A poor work atmosphere might result in the loss of high-quality nurses who are vital to organisational survival.

5.3.10 Mediating Effect of Work Environment on the Relationship between SMP and Safety Participation

The present study also hypothesised that the work environment would mediate the relationship between SMPs and safety participation (H9). However, it is interesting to note that the above studies did not specifically examine the characteristics of SMPs. In relation to the present study, the above finding denotes that the respondents of the study positively perceived that to maintain a high scale of safety participation among nurses, if the ideas are considered by management, it could eventually increase their positive level of compliance with safety-related activities in their place of work.

Thorough the combined function of safety participation with the role of the work environment mediator, the hospital management will be better aware of the elements to be tackled to increase their safety participation levels. One field of results in this study that can benefit hospital organisations mostly concerns the workplace environment. The researcher observed that employers could focus on SMPs to enhance nurse's safety participation, and by doing so, they can create positive attitudes to a positive working environment. The workplace is looked at as the workers' second home. While the barriers between work and home life begin to disappear, employment takes an ever-increasing part of our lives; so too does SMPs and, by extension, safety participation.

Therefore, the promotion of a work environment that plays a mediating role in increasing safety engagement and minimising disagreeable SMPs should be given particular emphasis. A plausible reason could be due to steps taken by hospital management to achieve optimal SMP, which can guarantee adequate safety participation among nurses that can create a pleasant job environment. This means that when nurses working in Jordanian hospitals observe SMP rules and procedures, they promote a social context that helps to shape favourable working environment conditions, and by implication, an improved level of safety participation.

5.3.11 Mediating Effect of Work Environment on the Relationship between SMP and Risky Behaviour

The present study also hypothesised that the work environment would mediate the relationship between SMP and risky behaviour (H10). However, the above studies did not explicitly examine the work environment but rather a worker's safety climate. The researcher used the above-cited studies in relation to the current research-based on plausible occurrences. The above finding denotes that the respondents of the survey probably did not enjoy a positive perception of SMPs, which negatively shaped their work environment perceptions and eventually led to an increase in nurses' risky behaviour-related activities in their place of work.

This hypothesis was not empirically supported as the statistical value obtained was lower than acceptable empirical thresholds. The hypothesis discussed is theoretically and conceptually logical (Clarke, 2010; Nelson et al., 2014) in that enhancing the nurse working environment is through increasing nurses' capability towards reducing risky behaviour and decrease the incidence of unsafe SMPs, which in turn results in higher safety-related behaviours.

A plausible explanation for this result is that nurses working in the hospital might be of the premonition that the SMPs do not necessarily have a strong bearing on their working environment perceptions and predisposition to behave in risky manners. Hence, the researcher believes that the respondents see the need to take risks as self-deciding on whether their hospital management does the right thing or not. It is also not a guarantee that nurses' work environment perceptions and their attendant risky behaviours are a factor for deciding SMPs related tendencies.

In supporting the position of the researcher, Liu et al. (2015) posits that certain factors come to play in defining the risk-taking tendencies of individuals, noting that these tendencies and/or behaviours vary based on individual differences. Specifically suggested are personal characteristics of individuals, which cannot be controlled by prevalent organisational factors that are supposed to guide employees' conduct (Sitkin & Pablo, 1992). Furthermore, employees' decision of whether or not to follow laid-down safety procedures and regulations while carrying out their routine job roles is a function of risk-based decision-making behaviour that decides circumstances within and outside the control of the individuals (Huang et al., 2016). Besides that, the decision of individuals on how they behave is, to no small extent, predicated upon their level of sensitivity, prior experiences, risky behaviours and related idiosyncratic factors (Kouabenan, Ngueutsa, & Mbaye, 2015).

5.4 RESEARCH IMPLICATIONS

The results of this research offer three critical implications: 1) theoretical implications in safety literature and theory, 2) practical implications to practitioners, and 3) methodology implication. These implications were made based on previous sections' findings and discussions. The implications are discussed in the following text.

5.4.1 Theoretical Implications

The core theoretical gap addressed in this study is the mediating role of the work environment in explaining the relationship between SMPs and safety performance. Therefore, this study provides a significant theoretical contribution to the domain of knowledge in the safety field. Firstly, this research leads to various safety literature contributions by addressing the fact that studies that devote attention to the potential mediating role of the work environment are sparse. Furthermore, the work environment is often seen and positioned in the literature as a mediator of the relationship (Hemström, 2005; Lee, Chiang, & Kuo, 2019) in safety research. This research is among the first that contributes to the relation between SMPs and nurses' safety performance by investigating the role of the work environment as a mediating effect. Thus, the main contribution of the present study is the introduction of the work environment variable into the safety literature as a mediating variable. In the clime of theory testing and the knowledge of the researcher, this study is among the first to introduce SMPs as a unidimensional construct. Besides, this study also used risky behaviour as the third factor of safety performance.

This research extends the domain of SET and validates its applicability empirically to hospital safety in Jordan. More significantly, integrating the SET as a research model showed its significance in safety management research. With specific reference to the relationship between SMPs and safety compliance (refer to Table 4.16) and consistent with the theoretical contribution in this study which can be explained in the relationship between employer and employees, if they give psychological capital, more reciprocation will be received when positive resources are spent which can enhance employee's participation, compliance and reduction in risky behaviour. By this development, the management should prioritise on SMPs among nurses in achieving optimal safety compliance, participation, and lowering risky behaviours in the hospitals.

Turning now to the main effect on the relationship between SMPs and safety participation, the contribution in this study can be located whereby when nurses perceive that they are given opportunities to be involved in various safety practices, they will reciprocate by engaging in improved safety participation. This has added to the body of knowledge in the SET domain, considering the fact that the concept of reciprocity has been enhanced and strengthened by increasing nurse's participation in safety practices that have yielded positive results for the nurses.

On the relationship between SMPs and risky behaviour**, t**his finding also emphasises the element of reciprocity in the relation between employer and staff. In the context of this study, the nurses would demonstrate a high level of SMPs if the management prioritises the safety aspect in the hospitals. Therefore, to ensure that the positive role of SMPs is in place, the management should focus on the risky behaviour aspects of its operation. Thus, this finding offers a novel empirical validation to the theoretical justification and expansion of the SET by demonstrating that a sufficient level of SMPs thrust could help reduce risky behaviours among nurses in Jordanian hospitals.

Similarly, the main effect on the relationship between SMPs and the work environment suggests that the practice of safety management is selected as an antecedent of the work environment because it is theory-driven. When nurses perceive great SMPs occasioned by the activities of management in relation to their safety, then they will develop positive perceptions of the comfortability and user-friendly nature of their work environment. This should, in turn, lead them to ensure improvements in their safety performance. This has also added to the knowledge and increased understanding of the SET domain by confirming the positive responses of nurses among Jordanian hospitals to the favourable environment in which they work. The concept of reciprocity is further availed and reflected in the complementary responses displayed by nurses, driven by the enabling working environment provided by the management leading to a desired safety management performance outcome.

Turning now to the main effect on the relationship between work environment and safety compliance, the result of this research has announced a positive and significant relationship among work environment and safety compliance for nurses (see Table 4.16). This illustrates how hospitals with a conducive working environment would achieve high safety compliance. Also, the psychological work environment parameters of personal or general burnout, client-related burnout, and job stress are essential factors to determine the work environment among nurses in the surveyed hospital. By relying on the SET theory, the evidence of reciprocity is shown in how the nurses would be more likely to exhibit a high level of safety compliance at work because they work under favourable work conditions.

The management should prioritise improving the work environment among nurses in achieving optimal safety compliance in the hospitals. This is illustrated in the fact that employees seem to express more appreciation on the organisation's investments and support by exhibiting positive return behaviours towards the organisation. Scholars have argued that employees aim to reciprocate in kind (e.g., (Morrison, 1996; Snape & Redman, 2010) Similarly, Morrison (1996, p. 503) argues that the development of a long-term relationship with employees will lead to more engagement in their contextual behaviours in defining nurses' work environment concerning social compliance.

In the current study, the theory provides an opportunity to explain the relationship between work environment and safety compliance of nurses in Jordanian hospitals. This study highlighted that when nurses perceived that they were working in a decent working environment, they would reciprocate by engaging in improved safety participation.

Similarly, Dedobbeleer and Béland (1991) pointed out that safety participation could be successfully enhanced through the application of a participative approach to safety, specifically when employees have an enabling environment to share their insights on safety matters and in designing safety measures. Therefore, this finding has validated the SET theory by demonstrating the reasoning that nurses are more likely to comply with all the rules and regulations with regard to the safety aspects as long as the work environment is positive and employee-friendly.

This finding is compatible with earlier studies (e.g., Cornelissen et al., 2017; Kwon & Kim, 2013; Neal & Girffin, 2006; Lin et al., 2019) which reported that nurses who work in a positive working environment in terms of hospitals' safety matters are more likely to be involved in the necessary safety intervention design and execution.

The contribution concerns the relationship between work environment and risky behaviour when nurses perceive that they are faring in a suitable working environment, as they will reciprocate by engaging in reduced risky behaviour. In a similar context, Gevars (1983) and Dedobbeleer and Beland (1991) found that a stable environment for a nurse would effectively restrict risky behaviour, especially in a facilitating environment for sharing their perspectives on safety issues and when drawing up safety measures. Consequently, they would be more likely to comply with all laws and regulations addressing health concerns.

This finding is consistent with previous studies (e.g., Spence Laschinger & Leiter, 2006; Trinkoff et al., 2008; Hutchinson & Jackson, 2013; Rogers-Clark, Pearce, & Cameron,

2009) which reported that nurses who work in a displeased working environment in terms of hospitals safety matters are more likely to be involved and suffer from all risky behaviour-related activities. It can be argued that this finding has added to the body of knowledge and the domain of the SET by revealing the reciprocation validated by nurses working in Jordanian hospitals in responding positively to the provision of a pleasant working environment. Thus, nurses have refrained from risky behaviours that could make the work environment risky.

An active mediation of the relationship between SMPs and safety performance components (safety participation, safety compliance) and work environment has emerged from this study. It is no surprise that the work environment has a powerful mediation feature as there is a wealth of evidence showing that employees who view the workplace due to inequality will become dissatisfied and unmotivated employees and would not be pushed on by extrapolation to make the SMPs work effectively or efficiently. Gyekye (2005) offers facts to back this line of thinking. Gyekye (2005) noticed that employees who showed more compliance with the conditions in the workplace had better views of the work environment, were more committed to follow safety management policies, and thus had a lower injury rate. The mediating role of the work environment is addressed in greater detail by Hemström (2005), who like Lee et al. (2019) endorsed their mediation outcomes through the theoretical argument that high-performance work practices can affect organisational performance through changes in the internal social structure of an organisation. Indeed, these results indicate that SMPs are successful in minimising workplace injuries by influencing both the employee's perceptions of the work environment and their behaviour.

Furthermore, it appears that in those instances where workers view/believe that their management has placed a strong priority of safety, that they are being treated with dignity and respect through SMPs, that they are carrying out their own work safely, and that they are cooperating with others to work safely as a group, the SMPs appears to be more effective in producing measurable results through the reduction in recordable and lost-time injuries.

From a research view, the findings of the study once more show the robustness of the consistency of the working environment to help explain the safety compliance behaviour among nurses in the organisation. Further studies have demonstrated adequately that the work environment construct can clarify safety compliance between healthcare workers (Barker & Nussbaum, 2011; Geiger-Brown & Lipscomb, 2010; Jennings, 2008; Kirwan, Matthews, & Scott, 2013; L. Lin & Liang, 2007; Series, 2004; Laschinger & Leiter, 2006). Further research must therefore be directed to the importance of the working environment, which is most crucial to motivate employees and their intent to remain (Shuck, Roberts& Zigarmi, 2018). The more nurses are satisfied with the work environment, the more the organisation would enjoy some measure of competency as an organisation that abides with safety compliance measures and procedures.

It is evident from the findings that nurses are more likely to exhibit a high level of safety compliance at work because they work under favourable work conditions that positively shape their working environment perceptions, this, in turn, improved their safety compliance behaviours. Concisely put, insofar as the working environment perceptions of employees are formed by the influence of SMPs, and in the case of the present study, the anticipation and position that a safe work environment will mediate the relationship between SMPs and safety compliance is therefore well corroborated.

With regards to the mediating effect of the work environment on the relation between SMPs and safety participation and based on theory, people may consider the duty to reciprocate if they get successful expected care in social interactions. It goes to show that workers in organisations are more likely to fulfill the requirements of management for them when they sense the manager's liking, appreciation, and respect. Subordinates may thus feel obligated to reciprocate with their supervisors. Safety behaviours are usually mutual avenues.

In line with the SET, people should feel an obligation to reciprocate in social interactions when they obtain expected treatments. Employees in organisations are most likely to meet the expectations of the management when they sense the manager's appreciation, admiration and reverence. Consequently, subordinates may feel obligated to reciprocate with their supervisors. Safety behaviours are usually mutual avenues. While structured regulations typically produce specific safety requirements, workers sometimes prefer to ignore safety regulations and cut corners to maximise efficiency for more personal benefits, as several studies have shown (Ashour, Hassan, & Alekam, 2018). In some instances, violations of the safety regulations do not lead to indirect, immediate loss. However, strict compliance with such regulations may be considered to slow down the rate of work.

Consequently, it might not be entirely surprising that workers of specific organisations find that complying with safety regulations put extra pressure on them.

An improvement in safety performance (indicative of safety participation) is one typical example of the application of the SET. Relating the above position to the present study, the expectation is that when nurses perceive that the activities of management will lead to excellent SMPs in relation to their safety, then they will develop positive perceptions of the user-friendly nature of their work environment. Notably, Ashour et al. (2018) further emphasised that this should, in turn, lead to ensuring improvements in their safety performance indicators. Interestingly, in the safety research area, this position has been proven (Huang et al., 2016; Reader et al., 2017; Zohar et al., 2014).

Interestingly, the contribution to the mediating effects on relations between SMPs and risky behaviour by the work environment indicated that social exchange involves a set of interactions which establish obligations and freedom between the members of the workplace's social networks over a while (Cropanzano, & Mitchell, 2005; Cook, & Whitmeyer, 1992; Åmo, 2006). In the context of this study, social interactions appear to reciprocate and rely on another person's actions. In the existing literature, mutuality is not widely used. However, the mutual relationship between the two individuals has been used in the past.

Reciprocity through an organisation applies in particular to the sharing of collaboration between workers or between workers and the organisation (Dabos & Rousseau, 2004). More precisely, the reciprocity theory is based on the premise that the receiver of the good deed or exchange must return one good deed or exchange from one person at some point. In particular, under the right conditions, these mutually dependent or reciprocal partnerships can produce high-quality interpersonal relationships (Maurer et al., 2002). This means that within organisations, if workers are satisfied with the result of their workplace interactions, they are more likely to respond with higher workplace performance.

In addition, workers are more likely to respond by performing their obligations to their employer and/or hiring organisation when they are pleased with the outcome of their working relationships. Therefore, mutual relations of social exchange can only be established if all interested parties perceive the transaction as meaningful and feel that they might contribute. This research leads to an insight into the relationships between nursing workers and their managers in social exchange. It also forms a framework for establishing working relationships that promote and sustain both the SMPs and the working environment. This research, for example, used the exchange theory to analyse the impact on the relationship between SMPs and risky actions of the mediator in the work environment. The findings of this work complement and explain previous studies.

5.4.2 Practical Implications

The first objective of this study was to determine the level of safety performance among the employees in Jordanian public hospitals in Irbid governate, Jordan. From the analysis conducted, it is noted that the safety performance level among the respondents is satisfactory. In this regard, relevant stakeholders and key decision-makers must play a role to strengthen efforts directed towards improving the safety performance of nurses and, by extension, their worksites. Observed explicitly in the present study is that the SMPs were able to influence the work environment, which in turn determined safety performance outcomes. The above relationships have also been supported with extant empirical underpinnings from diverse work settings. The implications of the above position will now be discussed.

Firstly, because SMPs are critical factors that affect the safety performance of nurses in hospitals, hospital managers should give careful consideration to these factors when developing practices and policies. The study showed that the safety performance of nurses may be improved when SMPs are high. Therefore, to improve nurse safety performance and reduce nursing accidents and injuries, considerable attention should be paid to SMPs. In line with the prior studies demonstrating management commitment as the significant factor underlying hospital safety (e.g., Vredenburg, 2002), the hospital management in Jordan secondary health facilities could create positive SMPs by showing their commitment to safety by efforts such as proper involvement in hospital safety programs, reasonable budget allocations for safety, discussion on safety issues in meetings, and investment in nurses' safety training in the hospital.

On a similar note, the management deserves more attention from safety training, given that this factor determines safety performance among nurses. The study proposes for hospital administrators in Jordan to increase the safety training frequency for the nurses. Furthermore, training that focuses on specific safety performance such as emergency response training is also crucial to ensure that safety performance among nurses can be enhanced.

Secondly, the present study offers empirical evidence to demonstrate that by focusing on SMPs designed to enhance hospital safety, the hospital can receive benefits in the form of the nurses' positive safety performance. Hospital interventions focusing on improving SMPs may meaningfully improve safety performance and reduce injuries in hospitals. The finding of the current research proved that the management should increase the frequency of nurses' involvement in designing and implementing hospital safety by cooperating with the management to ensure safety compliance. Determining the extent to which safety training and management commitment to safety are associated with nurse's safety performance can provide the direction to the management on how to tailor interventions to enhance hospital safety.

Thirdly, because the work environment is an essential variable in this model, hospital managers should, therefore, endeavour to upsurge nurses' capabilities in improving the work environment by assessing opportunities for personal and professional development, goals sharing, decision making, making them feel valued, and provide flexibility to change how they organise their duties at the workplace to enhance work environment perceptions.

This would possibly lead to improved safety performance of nurses and reduced incidences of injury. This would bring benefits to hospitals by maintaining a healthier status in the hospitals and by improving nurses' morale. To the management, this will reduce compensation cost, lower employee turnover, reduce the insurance premium, reduce lost time, produce efficient and motivated nurses, and consequently improve hospitals' productivity and performance.

In summary, policymakers, JMoH healthcare members, decision-makers and safety managers should make use of these results to provide an appropriate budget for training and continuing education programmes. JMoH hospital administrators should build confidence, develop a positive culture and maintain an optimal work environment that can maximise safety efficiency. Such targeted managers and leaders can, therefore, use the findings of this study to set out recommendations and policy decisions that facilitate safety efficiency. This, in effect, will help to improve the results for both nurses and patients.

5.4.3 Methodology Implications

In view of the methodological contribution taken in this study, the proposed study is expected to add to the expansion of the SET (Blau, 1964). A further review of the management and occupational safety and health (OSH) literature suggests that most studies associated with the context of the present study were done in Western and Eastern countries and nations with well-developed and high technology-driven work systems and with similar cultures. There is a lack of research in the Jordanian setting, which is an underdeveloped country with less technology-driven systems. Additionally, Jordan has an Arab-Islamic culture that is fundamentally different from the Western culture.

Besides that, this research offers empirical evidence of the theoretical linkages between the variables examined. Accordingly, established measures were adopted and adapted to ensure their compatibility with the context of the Jordanian health sector. Furthermore, the PLS-SEM path modelling was used to validate the measures and examine the hypothesised linkages among the variables. Systematic assessment of the measures utilised in this study can lead to assist future researchers in producing more reliable and valid measures.

In the clime of theory testing and the knowledge of the researcher, this study is among the first to introduce SMP as a unidimensional construct. In our simulations and empirical implementation, this study has used the reflective-formation hierarchical variable structure, even though in established PLS-SEM literature, only limited attention has been paid while it is the most used model type (Ringle et al., 2012).

5.5 LIMITATIONS OF STUDY

This research contributed to the safety literature on the relevance and utility of the work environment by relating it directly to the hospital environment. This has not been investigated in the hospital setting before and the significance of SMPs in understanding nurses' safety performance in the Jordanian setting. As with every empirical study, there are limitations to the findings of the current study. Hence the following constraints can be assessed when interpreting the results.

First, with specific reference to the Jordanian context, there is a lack of data in all sectors of the Jordanian economy, including healthcare, which makes studying workplace injuries and fatalities difficult for the researcher. To clarify this problem in the Jordanian healthcare context, the researcher conducted a preliminary examination of a small number of individuals among the target population as Kanter, Tsai, Holman, and Koerner (2013) and Frohm, Lindström, Winroth, and Stahre (2006) suggested. This preliminary study was conducted from March to April of 2018 among 32 nurses using a survey. The findings suggested a not-too satisfactory level of safety performance.

Second, the measures of all the constructs, i.e., SMPs, work environment, and safety performance, were collected from questionnaires completed by the same employee at the same time, which might create common method variance (CMV). To get around this limitation, the study minimised the effect of CMV using both procedural remedy and by conducting Harman's one-factor tests (Podsakoff et al., 2003). The test proved that CMV did not seem to be a serious problem. Therefore, the findings should be interpreted with caution.

Third, safety participation, safety compliance and risky behaviour were assessed in this study by using self-report steps that may be associated with bias in social desirability (Grimm, 2010). There is a probability that the participants may have over-reported their safety participation, safety compliance, and risky behaviour in the survey questionnaires. To get around this limitation, the collection of data in this study allowed for the respondent's privacy and assured them that the information would be kept confidential (Grimm, 2010). The results should, therefore, be carefully interpreted.

Finally, due to the constraint of resources, this research focused only on secondary hospitals in Irbid Jordan and excluded data from other governorates and regions in Jordan due to time and money constraints. The perceptions of nurses from all the provinces or regions in Jordan may allow for comparisons. Therefore, this research is restricted to nurses employed in secondary hospitals in Irbid Jordan. This may also limit the generalisability of the results to all healthcare workers, to other categories of health facilities, or to different geographic locations.

5.6 SUGGESTIONS FOR FUTURE RESEARCH

The study would recommend several possible future lines of investigation for future research. First, this study was pioneering in exploring the mediating role of the work environment on the relationship between SMPs and nurse's safety performance. Thus, additional research is required to confirm these findings and increase comprehension in the mediating role of the work environment on nurse's safety performance in other high-risk industries such as chemical, construction, or manufacturing. Therefore, this study should be replicated in different settings to generalise and confirm the findings of the study.

Second, in the present study, the nurses' perceptions of SMPs on their self-reported safety performance were examined. Future studies are recommended to replicate this study from the hospital manager's perspective and compare it with the responses of nurses. This may aid to clarify the gap between the hospital management's view on SMPs and those of the workers. Third, further research is also recommended to find out the possibility of generalising the results to hospitals in other countries. It may be likely that societal or cultural influences can play a role to obtain objective measures of safety performance to compare how the self-report measures reflect the relationship between the SMPs and worker's safety performance.

Finally, the work environment should be tested as a moderator in future studies to see if a different outcome can be realised. Hence, there is less literature indicating that attention has been paid to the fundamental reasons why work environment predicts safety performance. Therefore, more investigation is needed to examine such a moderator effect.

5.7 CONCLUSION

Despite some limitations, this study answered all of the research objectives and questions raised. The study had successfully investigated the associations in Jordanian hospitals among SMPs, work environment and safety performance. The study has thus provided extra empirical support regarding the work environment as a mediator for the evolving safety literature.

The results also contributed to theoretical terms. First, although there have been numerous studies investigating the performance of employee safety, this study highlighted a significant theoretical research gap by integrating the mediating role of the working environment as a crucial construct in the safety field. Second, the theoretical framework of the study also offers limited additional support for the importance and relevance of the SET. In addition, the study has contributed to the scant literature on safety in the Middle East. Besides the theoretical donations provided by the study, the results offer substantial practical implications to hospital administrators about how to improve nurses' performance in safety. Third, this study operationalised SMPs as a unidimensional construct while extracting risky behaviour as a third component for measuring safety performance. Lastly, several forward directions for future research were proposed based on the study's limitations.

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APPENDIX A
Preliminary Study of Workplace Safety

March. 2018

Dear respondent:

My name is Abdallah Mohammed. I am a PhD student majoring in healthcare management at Universiti Utara Malaysia. As a part of my doctoral study, I must conduct a preliminary study. The aim of this preliminary study to assess and develop different aspects of the study and collect data to facilitate the planning and conduct of the study to assess workplace safety. Your cooperation and participation in this study will be appreciated.

The information will be confidential. So, no need exists to write your name or any identifying information. All the data will be aggregated and will be strictly used for academic purposes only. I am looking forward to completing my questionnaire when you have free time and later I will back to collect it.

Thank you in advance for your time, cooperation and effort.

Sincerely

Abdallah Mohammad
PhD Candidate, Health Management, College of Business
Universiti Utara Malaysia
Kedah, Sintok (06010), Malaysia.

Please answer each of the following questions honestly and carefully by filling in a blank and ticking (√) in the appropriate boxes that correspond to the questions below.

1. Which of the following categories includes your age?

□22-30 □31- 40

□41-50 □51- 60

2. What is your sex?

□Male □Female

3. How many employees work in your organization or company, taking into account all units and locations?

□Less than 100 employees □ 101-200 employees

□201- 400 employees □ 401-800 employees

□801 – 1600 employees □ over 1600 employees

4. Which of the following describes your current work status? Full time or part time

□Full time □Part time

5. What region do you live in the Hashemite Kingdom of Jordan?

□North

□Central

□South

6. **The following question asks how you feel about safety in your current workplace. Keep in mind both what you have experienced at your current employer, as well as things you have observed or believe to be true in your current workplace. If you work for more than one employer, please answer for the workplace where you work the most hours. Read each statement carefully; some statements are positively phrased; others are negatively phrased by fill in blank and tick (√) in the appropriate box that corresponds to the questions below.**

		Agree	**Disagre e**
1.	I can protect myself and co-workers through my actions while on the job.		
2.	Safety is a priority at my workplace.		
3.	Management shows they care about employee safety.		
4.	Management insists that employees think about safety when doing their jobs.		
5.	Safety training is part of every new employee's orientation.		
6.	Employee health and wellness is promoted at work.		
7.	Employees are well trained in emergency practices, including evacuation.		
8.	All employees are involved in solving job safety issues.		
9.	Management does only the minimum required by law to keep employees safe.		
1(	Safety takes a back seat to completing job tasks.		
11	Employees are afraid to report safety issues.		
12	Employees are resistant to working safely.		

7. List 3 common hazards that you faced every day in your work.

1.

2.

3.

8. In the 3-past month, have you experienced any injury due to your work? If yes, please indicate the types of injury.

…………………………………………………………………………………………
…………………………………………………………………………………………
………………

9. Which statement best describes your level of responsibility within your organization for health and safety issues?

□Not involved □Only as it relates to my job

□Involved, but not a safety professional □Health and safety professional

10. Which of the following, if any, best describes your current job or position in your organization?

□Outside Contractor □Temporary Employee, Apprentice or Intern

□Employee or Worker □Supervisor

□Middle Manager □Executive Leadership or Upper Management

□Other

11. How long have you worked for your current employer?

□Less than 1 year □1-5 years

□6-10 years □11-20 years

□21 years or more

12. What is the highest level of education you have completed?

□Elementary school □Some high school

□Graduated high school □Trade or technical school

□Some college □Graduated college

□Graduate or professional school

13. Where do most of the employees at your organization work?

□At a single, headquarters location □At one of several locations

□Remotely from home □At temporary job sites or on the road

14. Which of the following best describes your workplace?

□Office □Retail store □School or other educational institution

□Manufacturing or industrial facility □Healthcare (hospital or doctor's office)

□Other □Home office □Warehouse

□Foodservice business □Construction zone □Public transportation

The End

Thank you for your cooperation

RESULT OF PRELIMINARY STUDY
Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	22-30 years	14	43.8	43.8	43.8
	31-40 years	13	40.6	40.6	84.4
	41-50 years	5	15.6	15.6	100.0
	Total	32	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	21	65.6	65.6	65.6
	Female	11	34.4	34.4	100.0
	Total	32	100.0	100.0	

How many employees work in your organization or company, taking into account all units and location

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Less than 100 employees	4	12.5	12.5	12.5
	101-200 employees	4	12.5	12.5	25.0
	201-400 employees	10	31.3	31.3	56.3
	401-800 employees	6	18.8	18.8	75.0
	801-1600 employees	6	18.8	18.8	93.8
	Over 1600 employees	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

Working status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full time	30	93.8	93.8	93.8
	Part time	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

What region do you live in the Hashemite Kingdom of Jordan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	North	16	50.0	50.0	50.0
	Central	12	37.5	37.5	87.5
	South	4	12.5	12.5	100.0

	Total	32	100.0	100.0	

Q1: I can protect myself and co-workers through my actions while on the job

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	32	100.0	100.0	100.0

Q2: Safety is a priority at my workplace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	24	75.0	75.0	75.0
	Strongly Agree	8	25.0	25.0	100.0
	Total	32	100.0	100.0	

3: Management shows they care about employee safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	31.3	31.3	31.3
	Strongly Agree	22	68.8	68.8	100.0
	Total	32	100.0	100.0	

Q4: Management insists that employees think about safety when doing their jobs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	43.8	43.8	43.8
	Strongly Agree	18	56.3	56.3	100.0
	Total	32	100.0	100.0	

Q5: Safety training is part of every new employee's orientation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	12	37.5	37.5	37.5
	Strongly Agree	20	62.5	62.5	100
	Total	32	100	100	

Q6: Employee health and wellness is promoted at work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	18	56.3	56.3	56.3
	Strongly Agree	14	43.8	43.8	100.0
	Total	32	100.0	100.0	

Q7: Employees are well trained in emergency practices, including evacuation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	62.5	25.0	25.0

	Strongly Agree	12	37.5	75.0	100.0
	Total	32	100.0	100.0	

Q8: All employees are involved in solving job safety issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	43.8	43.8	43.8
	Strongly Agree	18	56.3	56.3	100.0
	Total	32	100.0	100.0	

Q9: Management doe only the minimum required by law to keep employees safe

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	20	62.5	62.5	62.5
	Strongly Agree	12	37.5	37.5	100.0
	Total	32	100.0	100.0	

Q10: Safety takes a back seat to completing job tasks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	28	87.5	87.5	87.5
	Strongly Agree	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

Q11: Employees are afraid to report safety issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	68.8	68.8	68.8
	Strongly Agree	10	31.3	31.3	100.0
	Total	32	100.0	100.0	

Q12: Employees are resistant to working safely

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	22	68.8	68.8	68.8
	Strongly Agree	10	31.3	31.3	100.0
	Total	32	100.0	100.0	

Which statement describes your level of responsibility within your organization for health and safety issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not involved	6	18.8	18.8	18.8
	Only as it relates to my job	10	31.3	31.3	50.0
	Involved, but not a safety professional	8	25.0	25.0	75.0

	Health and safety professional	8	25.0	25.0	100.0
	Total	32	100.0	100.0	

Which of the following, if any, best describes your current job or position in your organization

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Outside contractor	2	6.3	6.3	6.3
	Temporary employee, apprentice or intern	2	6.3	6.3	12.5
	Employee or worker	18	56.3	56.3	68.8
	Supervisor	6	18.8	18.8	87.5
	Middle manager	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

How long have you worked for your current employer?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1-5 years	22	68.8	68.8	68.8
	6-10 years	8	25.0	25.0	93.8
	11-20 years	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

What is the highest level of education you have completed

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Some high school	2	6.3	6.3	6.3
	Graduated high school	2	6.3	6.3	12.5
	Trade or technical school	2	6.3	6.3	18.8
	Some college	4	12.5	12.5	31.3
	Graduated college	18	56.3	56.3	87.5
	Graduated or professional school	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

Where do most of the employees at your organization work

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At a single, headquarters location	12	37.5	37.5	37.5
	At one of several locations	16	50.0	50.0	87.5
	Remotely from home	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

Which of the following best describes your workplace

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Office	4	12.5	12.5	12.5
	Manufacturing or industrial facility	2	6.3	6.3	18.8
	Healthcare (hospitals or doctor's office)	26	81.3	81.3	100.0
	Total	32	100.0	100.0	

Common Hazards1

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Back pain	11	34.4	34.4	34.4
	Injury	7	21.9	21.9	56.3
	Infection	2	6.3	6.3	62.5
	Slipping	6	18.8	18.8	81.3
	Contamination	2	6.3	6.3	87.5
	Radiation or medication exposure	2	6.3	6.3	93.8
	Allergy Incidents	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

Common Hazards2

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	6.3	6.3	6.3
	Back pain	6	18.8	18.8	25.0
	Injury	10	31.3	31.3	56.3
	Infection	2	6.3	6.3	62.5
	Slipping	2	6.3	6.3	68.8
	Incidents from chemicals	2	6.3	6.3	75.0
	Contamination	2	6.3	6.3	81.3
	Radiation or medication exposure	4	12.5	12.5	93.8

	Others	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

Common Hazards3

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	10	31.3	31.3	31.3
	Back pain	2	6.3	6.3	37.5
	Infection	2	6.3	6.3	43.8
	Slipping	4	12.5	12.5	56.3
	Incidents from chemicals	4	12.5	12.5	68.8
	Contamination	2	6.3	6.3	75.0
	Allergy Incidents	2	6.3	6.3	81.3
	Others	6	18.8	18.8	100.0
	Total	32	100.0	100.0	

In the past 3 months, have you experienced any injury due to your work? If yes, please indicate the types of injury

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	26	81.3	81.3	81.3
	No	6	18.8	18.8	100.0
	Total	32	100.0	100.0	

Types of experienced injury

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	NO injury	6	18.8	18.8	18.8
	Back pain	4	12.5	12.5	31.3
	Injury	8	25.0	25.0	56.3
	Infection	2	6.3	6.3	62.5
	Slipping	2	6.3	6.3	68.8
	Allergy Incidents	6	18.8	18.8	87.5
	Others	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

Descriptive

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Q1	32	1	1	1.00	0.000
Q2	32	1	5	2.00	1.760
Q3	32	1	5	3.75	1.884
Q4	32	1	5	3.25	2.016
Q5	32	1	5	3.50	1.967
Q6	32	1	5	2.75	2.016
Q7	32	1	5	4.00	1.760
Q8	32	1	5	3.25	2.016
Q9	32	1	5	2.50	1.967
Q10	32	1	5	1.50	1.344
Q11	32	1	5	2.25	1.884
Q12	32	1	5	2.25	1.884
Valid N (listwise)	32				

APPENDIX B
English Questionnaire

COLLEGE OF BUSINESS
UNIVERSITI UTARA MALAYSIA

Dear respondent:

I am a PhD student specializing in the management of healthcare at University Utara Malaysia, conducting a survey regarding safety performance, to fulfil the PhD requirement of the university.

The objective of this study is to understand the relationship between management practices, work environment, and safety performance in Jordanian hospitals. I understand that your time is valuable, and many demands are made upon it by your heavy workload as nursing staff. However, your cooperation and participation in this survey, which will only require about 15-20 minutes of your time, is vital to the success of this study.

The information will be confidential. So, no need to write your name or any identifying information. All the data will be aggregated and will be strictly used for academic purposes only. I am looking forward to completing my questionnaire when you have free time and later I will back to collect it.

If you wish to know more about this study, please do not hesitate to contact me at: abodashour@yahoo.com, or alternatively, you can speak to me directly at this number: 0060174669920 (Malaysia), or 00962788396279 (Jordan).

Thank you in advance for your time, cooperation and effort.
Sincerely
Abdallah Mohammad Abu Ashour
Candidate PhD health Management College of Business
Universiti Utara Malaysia
Kedah, Sintok (06010), Malaysia.

SECTION A: DEMOGRAPHIC INFORMATION

Please answer all questions in this questionnaire as each respondent may see the question differently. Hence, no right or wrong answers. Please answer each of the following items by fill in blank and tick (√) in the appropriate boxes that correspond to the items below.

1. Gender: ❒ Male ❒ Female

2. Age:

❒ 21- 29 ❒ 30-38
❒ 39-47 ❒ 48-56
❒ Over 56 years

3. Educational level:

❒ Bachelor's degree ❒ Higher national diploma
❒ Master's degree ❒PhD

4. Marital status:

❒ Married ❒ Single
❒ Divorced ❒ widowed

5. Have you ever had any occupational accident ever since you started working in this hospital?

❒ Yes ❒ No

If yes, how many accidents have you had while working in this hospital?

❒ 1 – 3 ❒ 4 – 8
❒ 9 – 15 ❒ Over 15

6. How long have you been working with the present hospital? ____________ Years

❒ less than 3 ❒ 4 – 8
❒ 9 – 15 ❒ Over 15

SECTION B – SAFETY MANAGEMENT PRACTICES

Next questions concern the role of safety management practices. Considering only the hospital where you work, please circle the appropriate number on the 5-point scale which consists of 1 (Strongly Disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), and 5 (Strongly Agree) that best describes your response. Please keep your response general to your hospital as a whole. Think about how you most often see yourself, feel, behave and react to the research variables. Your honest answers will make your scores more useful by circling your response according to the following scale.

No.	Items	Strongly disagree				Strongly agree
1.	Safety is given high priority by the management of the hospital	1	2	3	4	5
2.	Safety rules and procedures are strictly followed by the management of the hospital.	1	2	3	4	5
3.	Corrective action is always taken when the management is told about unsafe practices.	1	2	3	4	5
4.	In my hospital managers/supervisors do not show interest in the safety of nurses.	1	2	3	4	5
5.	Management considers safety to be equally important as healthy delivery.	1	2	3	4	5
6.	Members of the management do not attend safety meetings.	1	2	3	4	5
7.	I feel that the management of the hospital is willing to compromise on safety for increasing healthcare delivery.	1	2	3	4	5
8.	When near-miss accidents are reported, my management acts quickly to solve the problems.	1	2	3	4	5
9.	My hospital provides sufficient personal protective equipment for the nurses.	1	2	3	4	5
10.	My hospital gives comprehensive training to the nurses in workplace health and safety issues.	1	2	3	4	5
11.	Newly recruits are trained adequately to learn safety rules and procedures.	1	2	3	4	5
12.	Safety issues are given high priority in training programmes.	1	2	3	4	5
13.	I am not adequately trained to respond to emergency situations in my workplace.	1	2	3	4	5
14.	Management of the hospital encourages the nurses to attend safety training programmes.	1	2	3	4	5
15.	Safety training given to me is adequate to enable me to assess hazards in hospital.	1	2	3	4	5

No.	Items	Strongly disagree				Strongly agree
16.	In this hospital, there is hazard reporting system where employees can communicate hazard information before incidents occur.	1	2	3	4	5
17.	Management of the hospital operates an open-door policy on safety issues.	1	2	3	4	5
18.	There is sufficient opportunity to discuss and deal with safety issues in meetings.	1	2	3	4	5
19.	The target and goals for safety performance in my hospital are not clear to the workers.	1	2	3	4	5
20.	There is open communication about safety issues in this hospital.	1	2	3	4	5
21.	The safety rules and procedures followed in my hospital are sufficient to prevent incidents occurring.	1	2	3	4	5
22.	The facilities in the safety department are not adequate to meet the needs of my hospital.	1	2	3	4	5
23.	My supervisors and managers always try to enforce safe working procedures.	1	2	3	4	5
24.	Safety inspections are carried out regularly.	1	2	3	4	5
25.	The safety procedures and practices in this hospital are useful and effective.	1	2	3	4	5
26.	Management of the hospital always welcomes opinion from workers before making final decisions on safety-related matters.	1	2	3	4	5
27.	My hospital has safety committees consisting of representatives of management and nurses.	1	2	3	4	5
28.	Management of hospitals promotes nurses' involvement in safety-related matters.	1	2	3	4	5
29.	Management of the hospital consults with nurses regularly about hospital health and safety issues.	1	2	3	4	5
30.	Nurses do not sincerely participate in identifying safety problems.	1	2	3	4	5
31.	In my hospital, safe behaviour is considered as a positive factor for job promotions.	1	2	3	4	5
32.	In my hospital, nurses are rewarded for reporting safety hazards (thanked, cash or other rewards, recognition in newsletter, etc.)	1	2	3	4	5
33.	In my hospital, safety week celebration and other safety promotional activities arranged by the management are very effective in creating safety awareness among the nurses.	1	2	3	4	5
34.	There exists very healthy competition among the nurses to find out and report unsafe condition and acts.	1	2	3	4	5

No.	Items	Strongly disagree				Strongly agree
35.	Our supervisor becomes very unhappy and angry when nurses find out and report unsafe conditions and act in our section	1	2	3	4	5
36.	Nurses are encouraged to cooperate with each other on resolving safety issues.	1	2	3	4	5
37.	Formal communication mechanisms among co-workers are robust enough to ensure that information being shared covers all necessary safety information.	1	2	3	4	5
38.	Formal mechanisms are utilized to ensure that key safety information is communicated between off-going and on-coming shifts	1	2	3	4	5

SECTION C –WORK ENVIRONMENT

Below are statements that describe the work environment. Please circle the appropriate number on the 5-point scale which consists of 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree).

No	Items	Strongly disagree				Strongly agree
1.	Nurses who work in this environment have shared goals.	1	2	3	4	5
2.	Nurses working in this environment feel valued for the work they do.	1	2	3	4	5
3.	When I or others make decisions, they are supported.	1	2	3	4	5
4.	Nurses working in this environment have opportunities for personal development.	1	2	3	4	5
5.	Nurses working in this environment have opportunities for professional development.	1	2	3	4	5
6.	Nurses working in this environment have the flexibility to change how they organize their work.	1	2	3	4	5

SECTION D – SAFETY PERFORMANCE

Below are statements that describe the safety performance. Please circle the appropriate number on the 5-point scale which consists of 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree).

No.	Items	Strongly disagree				Strongly agree
1.	I carry out my work in a safe manner.	1	2	3	4	5
2.	I use all the necessary safety equipment to do my job.	1	2	3	4	5
3.	I use the correct safety procedures for carrying out my job.	1	2	3	4	5
4.	I ensure the highest levels of safety when I carry out my job.	1	2	3	4	5
5.	I promote the safety program within the hospitals.	1	2	3	4	5
6.	I put in extra effort to improve the safety of the workplace.	1	2	3	4	5
7.	I help my co-workers when they are working under risky or hazardous conditions.	1	2	3	4	5
8.	I voluntarily carry out tasks or activities that help to improve workplace safety.	1	2	3	4	5
9.	I ignore safety regulations to get the job done.	1	2	3	4	5
10.	I break work procedures in the workplace.	1	2	3	4	5
11.	I take chances to get the job done.	1	2	3	4	5
12.	I bend safety rules to achieve a target.	1	2	3	4	5
13.	I get the job done better by ignoring some rules.	1	2	3	4	5
14.	Conditions at the workplace keep me from working according to the rules.	1	2	3	4	5
15.	I take shortcuts that involve little or no risk.	1	2	3	4	5
16.	I break rules due to management pressure.	1	2	3	4	5
17.	I am pressured by my workmates to break the rules.	1	2	3	4	5

APPENDIX C
Arabic Questionnaire

تاريخ : 2018

عزيزي المستجيب :

أنا طالب دراسات عليا من جامعة أوتارا ماليزيا. اسعى لإجراء استطلاع آراء الممرضين في المستشفيات على أداء الممرضين التي تمثل متطلبات الحصول على درجة الدكتوراه في الرعاية الصحية .

الهدف من هذه الدراسة هو مساعدتي على فهم العلاقة بين ممارسات الموارد البشرية والأداء المهني في المستشفيات الليبية. أفهم أن وقتك قيم وأن هناك العديد من المطالب على وقتك من عبء عملك الثقيل كممرض . ومع ذلك فإن تعاونك ومشاركتك في هذا المسح ، الذي يتطلب فقط 15-20 دقيقة من وقتك ، أمر حيوي لنجاح هذه الدراسة..

ستكون المعلومات سرية. لذلك ، لا حاجة لكتابة اسمك أو أي معلومات تعريفية. ستتم معالجة جميع البيانات وسيتم استخدامها لأغراض أكاديمية فقط .

شكرك مقدمًا على وقتك وتعاونك وجهدك.

مع خالص التقدير والشكر

عب محمد ابوعاشور

مرشح دكتوراه

الرعاية الصحية ا مال

جامعة اوتارا/ماليزيا

القسم أ – المعلومات الشخصية :

يرجى الإجابة على جميع الأسئلة في هذا الاستبيان. حيث قد يرى كل مشارك السؤال بشكل مختلف. حيث لا يوجد إجابات صحيحة أو خاطئة. يرجى الإجابة عن كل سؤال من الأسئلة التالية بصدق وحرص من ملء الفراغ وضع علامة (√) في المربعات التي تتوافق مع الحالة أدناه.

1. الجنس : ☐ ذكر ☐ أنثى

2. العمر:

☐ **25-18** ☐ **35-26**

☐ **45-36** ☐ **55-46**

☐ أكثر من **56**

3. المستوى التعليمي:

☐ ثانوي ☐ دبلوم

☐ بكالوريوس ☐ ماجستير

☐ دكتوراة

4. الوضع الاجتماعي :

☐ متزوج ☐ أعزب

☐ مطلق ☐ منفصل

☐ أرمل

5. هل سبق لك أن تعرضت لأي حادث مهني منذ أن بدأت العمل في هذا المستشفى؟

☐ نعم ☐

إذا كان الجواب نعم ، كم عدد الحوادث التي تعرضت لها أثناء العمل في هذا المستشفى؟

☐ **3-1** ☐ **8-4**

☐ **15- 9** ☐ الأكثر من **15**

6. منذ متى وأنت تعمل مع المستشفى الحالي؟ ___________ سنوات.

☐ أقل من 5 سنوات ☐ **10-6**

☐ **15-11** ☐ الأكثر من **15**

لقسم ب - ممارسات إدارة السلامة

فيما يلي العبارات التي تتعلق بدور ممارسات إدارة السلامة بالنظر لطاقم المستشفى الذي تعمل فيه ، يرجى وضع دائرة حول الرقم المناسب على مقياس ليكرت الخماسي الذي يتكون من 1) أوافق بشدة (2) غير موافق (3) محايد (4) أوافق (5) أوافق بشدة التي تصف أفضل إجابتك. يرجى التفكير بشكل عام على المستشفى ككل في الطريقة التي ترى بها نفسك وتشعر وتتصرف وتتجاوب مع متغيرات البحث. تستند إجابتك لصالح نتائجك لأكثر فائدة من خلال تحريك ردك وفقاً للمقياس التالي.

	العبارة	اوافق بشدة	لا اوافق	محايد	موافق	اوافق بشدة
1	مقتعطى أولوية عالية من قبل الادارة	1	2	3	4	5
2	يتم اتباع قواعد وإجراءات السلامة بشكل صارم من قبل الادارة.	1	2	3	4	5
3	يتم دائماً اتخاذ الاجراءات التصحيحية عندما يتم إخبار الادارة بالممارسات غير الامنة.	1	2	3	4	5
4	في مكان عملي المدراء /المشرفين يظهرون اي اهتمام بسلامة المرضين.	1	2	3	4	5
5	ترى الادارة أن السلامة مهمة بنفس القدر مثل الانتاج.	1	2	3	4	5
6	أعضاء الادارة يحضرون اجتماعات السلامة.	1	2	3	4	5
7	أشعر أن الادارة مستعدة لقديم تنازلات بشأن السلامة لقليل النفقات.	1	2	3	4	5
8	عندما يتم الابلاغ عن الحوادث الادارة تتصرف بسرعة من اجل حل المشاكل .	1	2	3	4	5
9	يوفر المستشفى ما يكفي من معدات الحماية الشخصية للممرضين .	1	2	3	4	5
10	المستشفى يعطي برنامج تدريبي شامل للممرضين في مجال الصحة والسلامة في مكان العمل	1	2	3	4	5
11	يتم تدريب الممرضين جيد بشكل كاف لتعليمهم قواعد واجراءات السلامة	1	2	3	4	5
12	قضية السلامة تعطى اولوية عالية في البرنامج التدريبي	1	2	3	4	5
13	اتلقى تدريب كافي للرد على حالات الطوارئ في عملي	1	2	3	4	5
14	الادارة تشجع الممرضين لحضور برامج التدريب على السلامة	1	2	3	4	5
15	البرنامج التدريبي في مجال السلامة الذي اعطي لي هو كافي لتمكيني من تقييم المخاطر في مكان العمل .	1	2	3	4	5
16	المستشفى التي اعمل بها تملك نظام الابلاغ عن المخاطر التي تمكن الممرضين من توصيل المعلومات عن الخطر قبل وقوع الحوادث	1	2	3	4	5
17	الادارة تعمل على سياسة الباب المفتوح بشأن القضايا المتعلقة بالسلامة	1	2	3	4	5
18	توجد فرص كافية لمناقشة ومعالجة قضايا السلامة في الاجتماعات	1	2	3	4	5
19	الغايات والاهداف الخاصة بأداء السلامة في المستشفى غير واضحة	1	2	3	4	5

5	4	3	2	1	هناك اتصالات مفتوحة حول قضايا مة في مكان العمل	20
5	4	3	2	1	إن قواعد وإجراءات مة المتبعة في المستشفى كافية لمنع وقوع الحوادث.	21
5	4	3	2	1	المرافق في قسم م ليست كافية لتلبية احتياجات المستشفى.	22
5	4	3	2	1	يحاول المشرفون والمديرون دوماً فرض إجراءات عمل آمنة.	23
5	4	3	2	1	تجرى عمليات الرقابة على م بصورة منتظمة.	24
5	4	3	2	1	إجراءات وممارسات م في هذا المستشفى جيدة وفعالة.	25
5	4	3	2	1	ترحب ا دارة دائما بأراء الموظفين قبل اتخاذها القرارات النهائية الخاصة م في العمل .	26
5	4	3	2	1	المستشفى لديه لجان خاصة تعنى مة مة في العمل تتألف من ممثلين ع ارة والممرضين .	27
5	4	3	2	1	ا دارة تشجع وتعزز الممرضين للمشاركة في المواضيع المتعلقة مة .	28
5	4	3	2	1	ا دارة تشاور مع الممرضين بانتظام حول قضايا الصحة و م في مكان العمل	29
5	4	3	2	1	الممرضون يشاركون باخ في تحديد مشاكل مة.	30
5	4	3	2	1	في المستشفى ، يعتبر السلوك ا من عام ً إيجابياً على ترقيات الوظيفية.	31
5	4	3	2	1	يتم تكريم الممرضات في المستشفى بسبب ا غ عن مخاطر مة (شكر أو نقد أو غير ذلك من المكافآت ، او رسالة شكر وتقدير ، وما إلى ذلك(	32
5	4	3	2	1	في اتف الأسبوع وأنشطة ترويج مة في المستشفى التي تنظمها ا دارة تكون فعالة للغاية في خلق الو مة بين الممرضين.	33
5	4	3	2	1	توجد منافسة صحية بين الممرضات لمعرفة الحالة عال غير ا نة وا غ عنها.	34
5	4	3	2	1	المشرف لدينا يصبح مستاء جدا وغاضبا عندما يتم ال غ وايير من قبل الممرضين عن أوضاع وأعمال غير آمنة في القسم لدينا.	35
5	4	3	2	1	يتم تشجيع الممرضين على التعاون مع بعضهم البعض في حل قضايا ا مة.	36
5	4	3	2	1	عمليات اتصال الرسمية هي قوية بما فيه الكفاية لضمان أن المعلومات التي يتم تبادلها بين ز ء العمل تغطي جميع المعلومات مة الضرورية.	37
5	4	3	2	1	يتم استخدام ا ت الرسمية لضمان نقل المعلومات مة الرئيسية بين المناوبات القادمة والذاهبة .	38

القسم ج بيئة العمل

فيما يلي المجموعة من العبارات التي تصف بيئة العمل. يرجى وضع دائرة حول الرقم المناسب على مقياس ليكرت الخماسي والذي يتكون من 1) أوافق بشدة(2) غير موافق(3) محايد(4) موافق(5) موافق بشدة).

	العبارة	لا أوافق بشدة	لا أوافق	محايد	موافق	موافق بشدة
1	الموظفون الذين يعملون في هذه البيئة لديهم أهداف مشتركة	1	2	3	4	5
2	يشعر الموظفون العاملون في هذه البيئة بالتقدير للعمل الذي يقومون به	1	2	3	4	5
3	عندما نتخذ أنا أو غيري قرارات يتم دعمها	1	2	3	4	5
4	الموظفون الذين يعملون في هذه البيئة لديهم فرص للتطوير الشخصي	1	2	3	4	5
5	الموظفون الذين يعملون في هذه البيئة لديهم فرص للتطوير المهني	1	2	3	4	5
6	يتمتع الموظفون العاملون في هذه البيئة بمرونة لتغيير طريقة تنظيم عملهم	1	2	3	4	5

القسم د - أد مة

في ما يلي عبارات التي تصف أداء مة يرجى وضع دائرة حول الرقم المناسب على مقياس ليكرت الخماسي والذي يتكون من 1) أوافق بشدة (2) غير موافق (3) محايد (4) موافق (5) موافق بشدة (.

	ا ة	افق بشدة	فق	محايد	موافق	أوافق بشدة
1	أقوم بعملي بطريقة آمنة.	1	2	3	4	5
2	أستخدم كل معدات مة ا م بعملي.	1	2	3	4	5
3	استخدم إجراءات مة الصحيحة لتنفيذ عملي.	1	2	3	4	5
4	أضمن أعلى مستويات مة عندما أقوم بعملي.	1	2	3	4	5
5	اقوم بتعزيز برنامج مة داخل المستشفى.	1	2	3	4	5
6	لقد وضعت جهدا إضافيا لتحسين مة لمكان العمل.	1	2	3	4	5
7	أساعد زم في العمل عندما يعملون في ظروف خطرة أو خطرة.	1	2	3	4	5
8	أقوم طواعية بتنفيذ مهام أو انشطة التي تساعد على تحسين مة في مكان العمل.	1	2	3	4	5
9	أتجاهل لوائح مة المهمة.	1	2	3	4	5
10	أنا بخرق جراءات العمل.	1	2	3	4	5
11	أنا أتجاهل الفرصة المهمة.	1	2	3	4	5
12	أنا اتجاهل قواعد مة لتحقيق الهدف.	1	2	3	4	5
13	لقد أنجزت المهمة بشكل أفضل عندما تجاهلت بعض القواعد.	1	2	3	4	5
14	تنطوي الشروط في مكان العمل من العمل وفقًا للقواعد.	1	2	3	4	5
15	نأخذ اختصارات تنطوي على مخاطر ضئيلة أو معدومة.	1	2	3	4	5
16	أخرق القواعد بسبب ضغوط ا دارة.	1	2	3	4	5
17	أنا مجبر من قبل زم في العمل لكسر القواعد.	1	2	3	4	5

APPENDIX D
OYAGSB Letter for Data Collection

OTHMAN YEOP ABDULLAH GRADUATE SCHOOL OF BUSINESS
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARUL AMAN
MALAYSIA

UUM
Universiti Utara Malaysia

Tel: 604 928 7101/7113/7130
Faks (Fax): 604 928 7160
Laman Web (Web): www.oyagsb.uum.edu.my

UUM/OYAGSB/R-4/4/1
16 October 2018

Honorable Minister
Ministry of Health
P.O Box 86
Tabarbour 11118
Amman Jordan

Dear Sir/Madam,

LETTER OF RECOMMENDATION FOR DATA COLLECTION AND RESEARCH WORK

This is to certify that **Abdallah Mohammad Barakat Abuashour (Matric No: 902025)** is a student of Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia persuing his Doctor of Philosophy (PhD). He is conducting a research entitled ***"Mediating Effect of Work Environment on the Relationship Between Safety Management Practices and Safety Performance Among Nursus of Public Hospitals in Jordan"*** under the supervision of Dr. Zuraida Binti Hassan.

In this regard, we hope that you could kindly provide assistance and cooperation for him to successfully complete the research. All the information gathered will be strictly used for academic purposes only.

Your cooperation and assistance is very much appreciated.

Thank you.

"BERKHIDMAT UNTUK NEGARA"
"KEDAH AMAN MAKMUR – HARAPAN BERSAMA MAKMURKAN KEDAH"
"ILMU, BUDI, BAKTI"

Yours faithfully

ROZITA BINTI RAMLI
Assistant Registrar
for Dean
Othman Yeop Abdullah Graduate School of Business

CERTIFIED TRUE COPY

NORAIDANI ISMAIL
Accountant
Othman Yeop Abdullah
Graduate School of Business
Universiti Utara Malaysia

c.c - Supervisor
- Student's File (902025)

Universiti Pengurusan Terkemuka
The Eminent Management University

AACSB ACCREDITED | AMBA ACCREDITED | STARS | AUN-QA | BETA GAMMA SIGMA | SOARING UPWARDS

APPENDIX E
Approval letter from the Jordanian health ministry Research Ethics Committee

وزارة الصحة

الرقم CODE : MOH REC 1800163
التاريخ ....
الموافق ....

قرار لجنة اخلاقيات البحث العلمي

إجتمعت لجنة اخلاقيات البحث العلمي بتاريخ٥/ ١٢ / ٢٠١٨ لمناقشة و دراسة البحث العلمي المقدم من طالب الدكتوراة عبد الله محمد بركات ابو عاشور **بعنوان :**

"دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة العامة واداء السلامة في المستشفيات الحكومية"

وعليه تم التوقيع من قبل اعضاء اللجنه حسب الاصول .

عضو اللجنة **مدير مستشفى الباطني والاشعة والامراض الجلدية** **الدكتور/ بشارة بقاعين**	**عضو اللجنة** **مدير مستشفى النسائية والاطفال** **الدكتور/ عصام الخواجا**	**عضو اللجنة** **المدير الطبي** **الدكتور/ جمال حمدان**
عضو اللجنة **مدير التمريض** **الدكتور/ هاني القضاة**	**عضو اللجنة** **رئيس وحدة الجودة** **الدكتور/ سلامة الرجوب**	**مقرر اللجنة** **منسق الجودة** **السيد/ عيسى زيدان**

AL - BASHIR HOSPITAL
ETHICS COMMITTEE

مستشفى البشير
وحدة الجودة

رئيس اللجنه
مدير إدارة مستشفيات البشير

الدكتور/محمود سليمان زريقات

المملكة الأردنية الهاشمية
هاتف: ٩٦٢٦٥٢٠٠٢٣٠+ فاكس: ٩٦٢٦٥٦٨٨٢٧٣٠+ ص.ب ٨٦ عمان ١١١١٨ الأردن . الموقع الإلكتروني: www.moh.gov.jo

APPENDIX F
Approval Letter to Collect Data from Hospital Belonging to Jordanian Ministry of Health

وزارة الصحة

الرقم ....
التاريخ .... م ب ا / لجنة اخلاقيات / ٨ ١٨٥٧٨
الموافق .... ٦ / ١٢ / ١٨م

مديرتطوير الموارد البشرية

تحيه طيبه وبعد ،،،

اشاره لكتابكم رقم تطوير /خطط / 9908تاريخ2018/11/26 بخصوص البحث المقدم من قبل طالب الدكتوراة عبد الله محمد بركات ابو عاشور

ارفق بطيه قرار لجنة اخلاقيات البحث العلمي والمتضمن الموافقة على إجراء البحث العائد للمذكور أعلاه .

للتكرم بالاطلاع واجراءاتكم لطفا .

واقبلوا الاحترام

مدير إدارة مستشفيات البشير

الدكتور محمود سليمان زريقات

المملكة الأردنية الهاشمية
هاتف: ٦٥٢٠٠٢٣٠ ٩٦٢+ فاكس: ٩٦٢٦٥٦٨٨٢٧٣٠+ ص.ب ٨٦ عمان ١١١١٨ الأردن . الموقع الإلكتروني: www.moh.gov.jo

APPENDIX F- Continue

وزارة الصحة

الرقم تطوير/ خطط/ ٩٩٠٨

التاريخ

الموافق ٢٦/ ١١/ ٢٠١٨

مدير ادارة مستشفيات البشير
رئيس لجنة اخلاقيات البحث العلمي

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب جامعة Universiti Utara Malaysia رقم uum/oyagsb/r-4/4/1 تاريخ ٢٠١٨/١٠/١٦ بخصوص الطلب المقدم من طالب الدكتوراة عبد الله محمد بركات ابو عاشور والذي يطلب فيه اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع واعلامي رأيكم حول امكانية الموافقة على اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير تطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

المملكة الأردنية الهاشمية
هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب:٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G
Approval Letter to Collect Data from Eight Hospital Belonging to Jordanian Ministry of Health in Irbid

Abu-Obaidah, Al Yarmouk, AL-Ramtha, Princess Basma, Princess Badea', Princess Raya, Princess Rahma and Mua'th Bin Jabal.

i. Abu-Obaidah Hospital

مستشفى أبي عبيدة الحكومي
وحدة ضبط الجودة
التاريخ ٦ / ٢ / ٢٠١٩م

وزارة الصحة

الرقم تطوير/ خطط/ ٢٠٢٨/ ١
التاريخ
الموافق ٢٠١٨/١٢/١٠م

مدير مستشفى أبي عبيدة
Abi Obaidah.

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦ المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الأردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

المملكة الأردنية الهاشمية
هاتف: ٢٣٠٠٥٢٠٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

ii. Al Yarmouk Hospital

وزارة الصحة

الرقم تطوير/ خطط/ ٣٨٢٠٢ ١

التاريخ

الموافق ١٨/ ٢/ ٢٠ م

مدير مستشفى اليرموك Al-Yarmouk Governmental hospital.

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

وزارة الصحة
مستشفى اليرموك
شؤون الموظفين
التاريخ

السيد م
- رئيسة التمريض
- رئيس وحدة الجودة
لاجراء اللازم

١٤/ ١/ ٢٠١٩

المملكة الأردنية الهاشمية

هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

iii. AL-Ramtha Hospital

بسم الله الرحمن الرحيم

وزارة الصحة

الرقم تطوير/ قطط/ ٣٨/ ١٠٢٠١

التاريخ

الموافق ١٠/١٢/١٨ م

مدير مستشفى الرمثا الحكومي
Al-Ramtha

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦ المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

المملكة الاردنية الهاشمية
وزارة الصحة
مستشفى الرمثا الحكومي
الرقم
التاريخ ١٢/١١/١٩ م

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

المملكة الأردنية الهاشمية
هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

iv. Princess Basma Hospital

وزارة الصحة

الرقم تطوير/ قطط/ ٢٣٨/ ١٠٢٠

التاريخ ....

الموافق ١٨/ ٢/ ٢٠١٩

مدير مستشفى .... بسمة

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦ المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

رئيسة قسم التمريض
رابعه الهزايمه

المملكة الاردنية الهاشمية
وزارة الصحة
مستشفى الاميرة بسمة التعليمي
١٢ شباط ٢٠١٩
الرقم : ....

المملكة الأردنية الهاشمية

هاتف: ٢٣٠٠ ٥٢٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب:٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

v. Princess Badea' Hospital

المملكة الأردنية الهاشمية

وزارة الصحة

الرقم تطوير/ فطط/ ٢٢٨ ،١

التاريخ

الموافق ١٠/ ٢/ ١٨ ٢٠

مدير مستشفى الأميرة بديعة

princess Badea'a hospital.

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦ المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

المملكة الأردنية الهاشمية

هاتف: ٠٠٩٦٢٦٥٢٠٠٢٣٠ فاكس: ٠٠٩٦٢٦٥٦٨٨٣٧٣ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

vi. Princess Raya Hospital

وزارة الصحة

الرقم

التاريخ

الموافق

مدير مستشفى الأميرة رايه

Princess Raya

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦ المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

رئيس التمريض

لإجراء اللازم

مع الشكر الجزيل

٢٠١٩/١/١٦

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعتة

المملكة الأردنية الهاشمية

هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

vii. Princess Rahma

وزارة الصحة

الرقم تطوير/ قطط/ ٢٨٠٠ ١

التاريخ

الموافق ١٨/ ٢/ ٢٠

مدير مستشفى الاميرة رحمة التعليمي للامراض الاطفال وجراحتها

Princess Rahma Teaching Hospital

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

الديوان / شؤون الموظفين

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

المملكة الأردنية الهاشمية

هاتف: ٢٣٠٠ ٥٢٠٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX G- Continue

viii. Mua'th Bin Jabal Hospital

وزارة الصحة

الرقم تطوير/ قطط/ ٢٣٨ / ١

التاريخ

الموافق ١٨/١٢/٢٠١٨م

معاذ بن جبل

مدير مستشفى Maaath ben Jabal

تحية طيبة وبعد ،،،

ارفق طيا صورة عن كتاب مدير ادارة مستشفيات البشير رقم م ب ا/ لجنة اخلاقيات/١٨٥٧٨ تاريخ ٢٠١٨/١٢/٦ المتضمن الموافقة لطالب الدكتوراة عبد الله محمد بركات ابو عاشور اجراء بحث بعنوان :

" دور بيئة العمل في العلاقة بين ممارسات ادارة السلامة واداء السلامة في المستشفيات الحكومية "

وذلك من خلال تعبئة الاستبيان المرفق من الممرضين والممرضات القانونيات العاملين في المستشفيات الحكومية في شمال الاردن " .

ارجو التكرم بالاطلاع وتسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

وزارة الصحة
مستشفى معاذ بن جبل
٦ - كانون الثاني ٢٠١٩
الموارد

مدير مديرية التعليم وتطوير الموارد البشرية / المكلف

الدكتورة سوسن جباعته

٦

المملكة الأردنية الهاشمية

هاتف: ٥٢٠٠٢٣٠ ٦ ٩٦٢+ فاكس: ٥٦٨٨٣٧٣ ٦ ٩٦٢+ ص.ب: ٨٦ عمان ١١١١٨ الأردن. الموقع الإلكتروني: www.moh.gov.jo

APPENDIX H
Missing Value Output

	N	Mean	Std. Deviation	Missing		No. of Extremes[a]	
				Count	Percent	Low	High
MangCom1	515	3.12	1.260	2	.4	0	0
MangCom2	516	3.04	1.227	1	.2	0	0
MangCom3	514	3.02	1.222	3	.6	0	0
MangCom4	515	3.11	1.172	2	.4	0	0
MangCom5	514	3.02	1.084	3	.6	0	0
MangCom6	515	3.33	1.192	2	.4	0	0
MangCom7	514	2.95	1.176	3	.6	0	0
MangCom8	515	3.23	1.219	2	.4	0	0
MangCom9	516	3.29	1.175	1	.2	0	0
SafTran1	515	3.27	1.204	2	.4	0	0
SafTran2	513	3.45	1.129	4	.8	25	0
SafTran3	514	3.12	1.166	3	.6	0	0
SafTran4	515	2.95	1.227	2	.4	0	0
SafTran5	513	3.17	1.150	4	.8	0	0
SafTran6	515	3.39	1.048	2	.4	18	0
SafCoFe1	516	2.92	1.187	1	.2	0	0
SafCoFe2	516	2.91	1.121	1	.2	0	0
SafCoFe3	514	2.88	1.192	3	.6	0	0
SafCoFe4	514	2.99	1.205	3	.6	0	0
SafCoFe5	516	2.90	1.111	1	.2	0	0
SafRP1	514	2.73	1.187	3	.6	0	0
SafRP2	515	3.09	1.211	2	.4	0	0
SafRP3	516	2.86	1.130	1	.2	0	0
SafRP4	516	2.82	1.172	1	.2	0	0
SafRP5	512	2.83	1.161	5	1.0	0	0
WISaf1	514	2.79	1.188	3	.6	0	0
WISaf2	514	3.16	1.211	3	.6	0	0
WISaf3	515	2.83	1.162	2	.4	0	0
WISaf4	513	2.80	1.135	4	.8	0	0
WISaf5	511	2.49	1.099	6	1.2	0	19
SafPP1	513	2.60	1.092	4	.8	0	25
SafPP2	512	2.46	1.139	5	1.0	0	18
SafPP3	516	2.75	1.161	1	.2	0	0
SafPP4	515	2.96	1.080	2	.4	0	0

SafPP5	515	2.72	1.097	2	.4	0	27
CF1	516	3.14	1.106	1	.2	0	0
CF2	516	2.78	1.084	1	.2	0	0
CF3	513	2.78	1.099	4	.8	0	0
WE1	515	3.65	1.154	2	.4	35	0
WE2	513	3.66	1.061	4	.8	21	0
WE3	512	2.75	1.116	5	1.0	0	0
WE4	512	3.02	1.177	5	1.0	0	0
WE5	515	2.78	1.134	2	.4	0	0
WE6	515	3.12	1.156	2	.4	0	0
SafCom1	517	3.95	1.033	0	.0	59	0
SafCom2	515	3.93	1.036	2	.4	60	0
SafCom3	512	4.01	.938	5	1.0	43	0
SafCom4	514	3.84	.988	3	.6	0	0
SafP1	514	3.87	.967	3	.6	0	0
SafP2	511	4.02	.931	6	1.2	39	0
SafP3	513	4.04	.976	4	.8	44	0
SafP4	516	3.72	1.179	1	.2	0	0
RB1	515	2.41	1.065	2	.4	0	24
RB2	514	2.38	.992	3	.6	0	11
RB3	514	2.96	1.158	3	.6	0	0
RB4	512	2.38	1.061	5	1.0	0	26
RB5	512	2.52	1.169	5	1.0	0	35
RB6	510	2.83	1.177	7	1.4	0	0
RB7	513	2.63	1.056	4	.8	0	29
RB8	514	2.63	1.083	3	.6	0	32
RB9	513	2.54	1.013	4	.8	0	20

a. Number of cases outside the range (Q1 - 1.5*IQR, Q3 + 1.5*IQR).

APPENDIX I
Content Validity Result

(1) Management Commitment to Safety

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
6	√	√	√	√	√	√	6	1.00
7	√	√	√	√	√	√	6	1.00
8	√	√	√	√	√	√	6	1.00
9	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(2) Safety training

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreemen	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
6	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

APPENDIX I- Continued

(3) Safety communication and feedback

Rating of item by six experts: item rated 3 or 4 a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(4) Safety rule and procedures

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(5) Workers involvement in safety

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	5	0.83
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion								0.97

APPENDIX I- Continued

(6) Safety promotion policies

Rating of an item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(7) Cooperation facilitation

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(8) Work Environment

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
6	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

APPENDIX I- Continue

(9) Safety compliance

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	6	1.00
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(10) Safety participation

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	
2	√	√	√	√	√	√	6	
3	√	√	√	√	√	√	6	
4	√	√	√	√	√	√	6	
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion							1.00	

(11) Risky behaviour

Rating of item by six experts: item rated 3 or 4 on a 4-point relevance scale

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Experts in Agreement	I-CVI
1	√	√	√	√	√	√	6	1.00
2	√	√	√	√	√	√	5	0.83
3	√	√	√	√	√	√	6	1.00
4	√	√	√	√	√	√	6	1.00
5	√	√	√	√	√	√	6	1.00
6	√	√	√	√	√	√	6	1.00
7	√	√	√	√	√	√	6	1.00
8	√	√	√	√	√	√	6	1.00
9	√	√	√	√	√	√	6	1.00
	1.00	1.00	1.00	1.00	1.00	1.00	S-CVI/Ave = 1.00 Average expert	
Proportion								0.98

APPENDIX J
Translation English Questionnaire to Arabic

عكور للترجمة والتدريب
Okour Center for Translation & Training
All Languages

ترجمة معتمدة

Date : ....

التاريخ : ١٢/٢/٢٠١٩

كلية الادارة

جامعة اوتارا الماليزية

عزيزي المستجيب :

أنا طالب دراسات عليا من جامعة أوتارا ماليزيا ، اسعى لاجراء استطلاع اراء الممرضين فيما يتعلق بأداء السلامة للمرضين ، لتلبية متطلبات الحصول على درجة الدكتوراه في الادارة الصحية .

الهدف من هذه الدراسة هو مساعدتي على فهم العلاقة بين ممارسات الإدارة وبيئة العمل وأداء السلامة في المستشفيات الأردنية. أتفهم أن وقتك قيم وأن هناك العديد من المطالب عليك من خلال عبء عملك الثقيل كممرض . ومع ذلك ، فإن تعاونك ومشاركتك في هذا المسح ، الذي يتطلب فقط ١٥-٢٠ دقيقة من وقتك ، أمر حيوي ومهم لنجاح هذه الدراسة.

ستكون المعلومات سرية . لذلك ، لا حاجة لكتابة اسمك أو أي معلومات تعريف. سيتم تجميع جميع البيانات وسيتم استخدامها للأغراض الأكاديمية فقط .

إذا كنت ترغب في معرفة المزيد عن هذه الدراسة ، يرجى عدم التردد في الاتصال بي على العنوان التالي:

يمكنك الاتصال بي مباشرة على هذا الرقم: ٠٠٦٠١٧٤٦٦٩٩٢٠ (ماليزيا) أو ٠٠٩٦٢٧٨٨٣٩٦٢٧٩ (الأردن).

.اشكرك مقدمًا على وقتك وتعاونك وجهدك

مع خالص التقدير والشكر

عبدالله محمد ابو عاشور

مرشح دكتوراه

الإدارة الصحة كلية الأعمال

جامعة اوتارا/ماليزيا

CERTIFIED TRANSLATION

السجل التجاري رقم : ٤١٧٨٤٠ - الرقم الوطني : ١٠٠٥٢٦٣٩٤ - خلوي : ٠٧٧٢٢٠١٣١٥ - هاتف : ٠٢٧٠٧٠٦٦٧
C.R No. 417840 - National No: 100526394 - Mobile: 0772201315 - Tel: 027070667

APPENDIX J- Continued

مركز عكور للترجمة والتدريب
Okour Center for Translation & Training (OCCT)
All Languages
جميع اللغات
ترجمة معتمدة

القسم أ – المعلومات الشخصية :
التاريخ Date: يرجى الإجابة على جميع الأسئلة في هذا الاستبيان. حيث قد يرى كل مشارك السؤال بشكل مختلف. حيث لا يوجد إجابات صحيحة أو خاطئة. يرجى الإجابة عن كل سؤال من الأسئلة التالية بصدق وحرص من خلال ملء الفراغ ووضع علامة (√) في المربعات المناسبة التي تتوافق مع الأسئلة أدناه.

1. الجنس: ☐ ذكر ☐ انثى

2. العمر:

☐ ٢١- ٢٩ ☐ ٣٠- ٣٨
☐ ٣٩ -٤٧ ☐ ٤٨ - ٥٦
☐ اكثر من ٥٧

3. المستوى التعليمي:

☐ بكالوريوس ☐ ماجستير
☐ دبلوم عالي ☐ دكتوراة

4. الوضع الاجتماعي :

☐ متزوج ☐ اعزب
☐ مطلق ☐ ارمل

5. هل سبق لك أن تعرضت لأي حادث مهني منذ أن بدأت العمل في هذا المستشفى ؟

☐ نعم ☐ لا

إذا كان الجواب نعم ، كم عدد الحوادث التي تعرضت لها أثناء العمل في هذا المستشفى ؟

☐ ١-٣ ☐ ٤-٨
☐ ٩ -١٥ ☐ اكثر من ١٥

6. منذ متى وأنت تعمل مع المستشفى الحالي؟ __________ سنوات.

☐ اقل من ٣ سنوات ☐ ٤ -٨
☐ ٩ -١٥ ☐ اكثر من ١٥

مركز عكور للترجمة والتدريب الأردن اربد Jordan Irbid Okour Center for Translation & Training (OCCT) Certified Translation ترجمة معتمدة

CERTIFIED TRANSLATION

السجل التجاري رقم : ٤١٧٨٤٠ - الرقم الوطني : ١٠٠٥٢٦٣٩٤ - خلوي : ٠٧٧٢٢٠١٣١٥ - هاتف : ٠٢٧٠٧٠٦٦٧
C.R No. 417840 - National No: 100526394 - Mobile: 0772201315 - Tel: 027070667

APPENDIX J- Continued

ـز عكور للترجمة والتدريب
Okour Center for Translation & Training (OCCT)
All Languages جميع اللغات
ترجمة معتمدة

القسم ب ـ ممارسات إدارة السلامة

التاريخ : Date

فيما يلي الأسئلة التالية تتعلق بدور ممارسات إدارة السلامة. بالنظر فقط إلى المستشفى الذي تعمل فيه ، يرجى وضع دائرة حول الرقم المناسب على مقياس ليكرت الخماسي الذي يتكون من ١ (لا أوافق بشدة) ٢ (غير موافق) ٣ (محايد) ٤ (أوافق) ٥ (أوافق بشدة) التي تصف أفضل إجابتك. يرجى الاحتفاظ بردك العام على المستشفى ككل. فكر في الطريقة التي ترى بها نفسك ، وتشعر وتتصرف وتتجاوب مع متغيرات البحث. ستجعل إجاباتك الصادقة نتائجك أكثر فائدة من خلال تحريك ردك وفقًا للمقياس التالي.

	الاسئلة	لا اوافق بشدة				اوافق بشدة
١	السلامة تعطى أولوية عالية من قبل إدارة المستشفى .	١	٢	٣	٤	٥
٢	يتم اتباع قواعد وإجراءات السلامة بشكل صارم من قبل إدارة المستشفى.	١	٢	٣	٤	٥
٣	يتم دائمًا اتخاذ الإجراءات التصحيحية عندما يتم إخبار الإدارة بالممارسات غير الآمنة.	١	٢	٣	٤	٥
٤	في مكان عملي المدراء / المشرفين لا يظهرون اي اهتمام بسلامة الممرضين.	١	٢	٣	٤	٥
٥	ترى إدارة المستشفى أن اهمية سلامة التمريض كأهمية تقديم الرعاية الصحية .	١	٢	٣	٤	٥
٦	أعضاء إدارة المستشفى لا يحضرون اجتماعات السلامة.	١	٢	٣	٤	٥
٧	أشعر أن الإدارة مستعدة لتقديم تنازلات بشأن السلامة لتقليل النفقات.	١	٢	٣	٤	٥
٨	عندما يتم الابلاغ عن الحوادث الادارة تتصرف بسرعة من اجل حل المشاكل .	١	٢	٣	٤	٥
٩	يوفر المستشفى ما يكفي من معدات الحماية الشخصية للممرضين .	١	٢	٣	٤	٥
١٠	المستشفى تعطي برنامج تدريبي شامل للممرضين في مجال الصحة والسلامة في مكان العمل .	١	٢	٣	٤	٥
١١	يتم تدريب الممرضين الجدد بشكل كاف لتعلم قواعد واجرات السلامة.	١	٢	٣	٤	٥
١٢	قضية السلامة تعطى اولوية عالية في البرنامج التدريبي.	١	٢	٣	٤	٥
١٣	لم اتلقى تدريبا كافيا للتعامل مع الحالات الطارئة في عملي .	١	٢	٣	٤	٥
١٤	ادارة المستشفى تشجع الممرضين لحضور برامج التدريب على السلامة .	١	٢	٣	٤	٥
١٥	البرنامج التدريبي في مجال السلامة الذي اعطي لي هو كافي لتمكيني من تقييم المخاطر في مكان العمل .	١	٢	٣	٤	٥
١٦	المستشفى التي اعمل بها لا تملك نظام الابلاغ عن الخطر التي تمكن الممرضين من توصيل المعلومات عن الخطر قبل وقوع الحوادث .	١	٢	٣	[illegible]	[illegible]

مركز عكور للترجمة والتدريب
Okour Center for Translation & Training (OCCT)
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CERTIFIED TRANSLATION

السجل التجاري رقم : ٤١٧٨٤٠ - الرقم الوطني : ١٠٠٥٢٦٣٩٤ - خلوي [illegible] - هاتف : ٠٢٧٠٧٠٦٦٧
C.R No. 417840 - National No: 100526394 - Mobile: 0772201315 - Tel: 027070667

APPENDIX J- Continued

مركز عكور للترجمة والتدريب
Okour Center for Translation & Training (OCC

All Languages جميع اللغات

ترجمة معتمدة

Date : .... التاريخ :

	الاسئلة	لا اوافق بشدة				اوافق بشدة
١٧	إدارة المستشفى تعمل على سياسة الباب المفتوح بشأن القضايا المتعلقة بالسلامة .	١	٢	٣	٤	٥
١٨	توجد فرص كافية لمناقشة ومعالجة قضايا السلامة في الاجتماعات	١	٢	٣	٤	٥
١٩	الغايات والاهداف الخاصة بأداء السلامة في المستشفى غير واضحة للعاملين.	١	٢	٣	٤	٥
٢٠	هناك اتصالات مفتوحة حول قضايا السلامة في مكان العمل	١	٢	٣	٤	٥
٢١	إن قواعد وإجراءات السلامة المتبعة في المستشفى كافية لمنع وقوع الحوادث.	١	٢	٣	٤	٥
٢٢	المرافق في قسم السلامة ليست كافية لتلبية احتياجات المستشفى.	١	٢	٣	٤	٥
٢٣	يحاول المشرفون والمديرون دومًا فرض إجراءات عمل آمنة.	١	٢	٣	٤	٥
٢٤	تجرى عمليات الرقابة على السلامة بصورة منتظمة.	١	٢	٣	٤	٥
٢٥	إجراءات وممارسات السلامة في هذا المستشفى مفيدة وفعالة.	١	٢	٣	٤	٥
٢٦	ترحب إدارة المستشفى دائما بأراء العاملين قبل اتخاذها القرارات النهائية بشان المسائل المتعلقة بالسلامة في العمل .	١	٢	٣	٤	٥
٢٧	المستشفى لديه لجان خاصة تعنى بالسلامة في العمل تتألف من ممثلين عن الادارة والممرضين .	١	٢	٣	٤	٥
٢٨	إدارة المستشفى تشجع وتعزز الممرضين للمشاركة في المواضيع المتعلقة بالسلامة .	١	٢	٣	٤	٥
٢٩	الادارة تتشاور مع الممرضين بانتظام حول قضايا الصحة والسلامة في مكان العمل.	١	٢	٣	٤	٥
٣٠	الممرضون لا يشاركون باخلاص في تحديد مشاكل السلامة.	١	٢	٣	٤	٥
٣١	في المستشفي ، يعتبر السلوك الآمن عاملاً إيجابياً للترقيات الوظيفية.	١	٢	٣	٤	٥
٣٢	يتم تكريم الممرضين في المستشفي بسبب الإبلاغ عن مخاطر السلامة (شكر أو مكافئة مالية أو غير ذلك من المكافآت ، او رسالة شكر و تقدير ، وما إلى ذلك)	١	٢	٣	٤	٥
٣٣	في الاحتفال بأسبوع وأنشطة ترويج السلامة في المستشفى التي تنظمها الإدارة ، تكون فعالة للغاية في خلق الوعي بالسلامة بين الممرضين.	١	٢	٣	٤	٥
٣٤	توجد منافسة صحية بين الممرضين لمعرفة الأفعال غير الأمنة والإبلاغ عنها.	١	٢	٣	٤	٥
٣٥	المشرف لدينا يصبح مستاء جدا وغاضبا عندما يتم الابلاغ عن تقارير من قبل الممرضين عن أوضاع وأعمال غير آمنة في القسم لدينا.	١	٢	٣	٤	٥
٣٦	يتم تشجيع الممرضين على التعاون مع بعضهم البعض في حل قضايا السلامة.	١	٢	٣		

مركز عكور للترجمة والتدريب
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السجل التجاري رقم : ٤١٧٨٤٠ - الرقم الوطني : ١٠٠٥٢٦٣٩٤ - خلوي ... - هاتف : ٠٢٧٠٧٠٦٦٧
C.R No. 417840 - National No: 100526394 - Mobile: 0772201315 - Tel: 027070667

APPENDIX J- Continued

ترجمة معتمدة

ـز عكور للترجمة والتدريب

Okour Center for Translation & Training (OCC

All Languages

جميع اللغات

Date : ……………… التاريخ :

	الاسئلة	لا اوافق بشدة				اوافق بشدة
٣٧	آليات الاتصال الرسمية بين العاملين في مختلف الاقسام هي قوية بما فيه الكفاية لضمان أن المعلومات التي يتم تبادلها بين زملاء العمل تغطي جميع معلومات السلامة الضرورية.	١	٢	٣	٤	٥
٣٨	يتم استخدام الطرق الرسمية لضمان نقل معلومات السلامة الرئيسية بين المناوبات القادمة والذاهبة .	١	٢	٣	٤	٥

القسم ج - بيئة العمل

فيما يلي الاسئلة او العبارات التي تصف بيئة العمل. يرجى وضع دائرة حول الرقم المناسب على مقياس ليكرت الخماسيوالذي يتكون من ١ (لا أوافق بشدة) ٢ (غير موافق) ٣ (محايد) ٤ (موافق) ٥ (موافق بشد).

	الاسئلة	لا اوافق بشدة				اوافق بشدة
١	الممرضون الذين يعملن في هذه البيئة لديهم أهداف مشتركة .	١	٢	٣	٤	٥
٢	يشعر الممرضون العاملون في هذه البيئة بقيمة العمل الذي يقومون به.	١	٢	٣	٤	٥
٣	عندما اتخذ أنا أو غيري قرارات ، يتم دعمها.	١	٢	٣	٤	٥
٤	الممرضون الذين يعملون في هذه البيئة لديهم فرص للتطوير الشخصي.	١	٢	٣	٤	٥
٥	الممرضون الذين يعملون في هذه البيئة لديهم فرص للتطوير المهني.	١	٢	٣	٤	٥
٦	يتمتع الممرضون العاملون في هذه البيئة بمرونة لتغيير طريقة تنظيم عملهم.	١	٢	٣	٤	٥

السجل التجاري رقم : ٤١٧٨٤٠ - الرقم الوطني : ١٠٠٥٢٦٣٩٤ - خلوي : ٠٧٧٢٢٠١٣١٥ - هاتف : ٠٢٧٠٧٠٦٦٧

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APPENDIX J- Continued

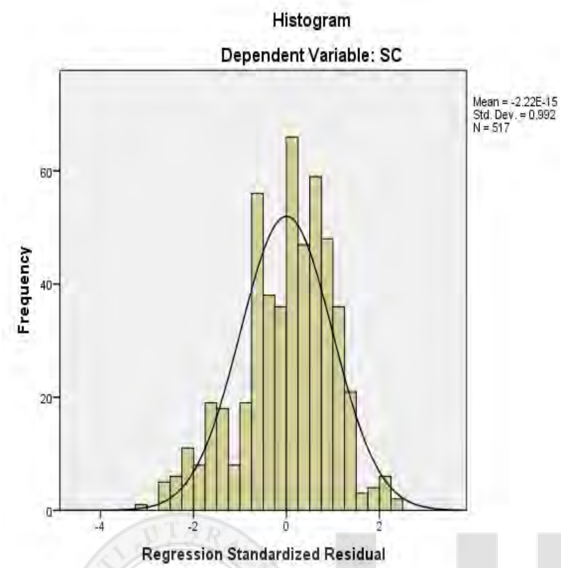
القسم د ـ أداء السلامة

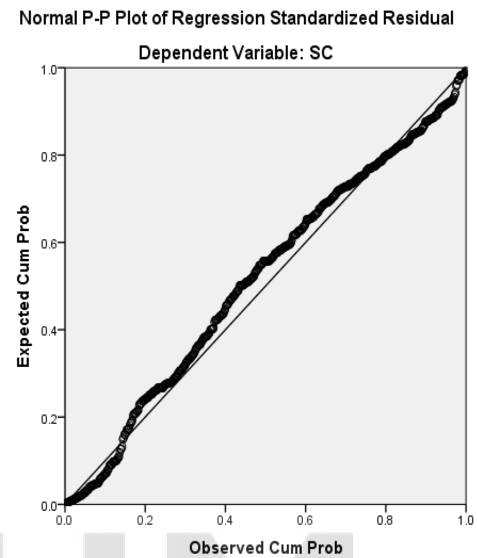
التاريخ : .... Date : ....

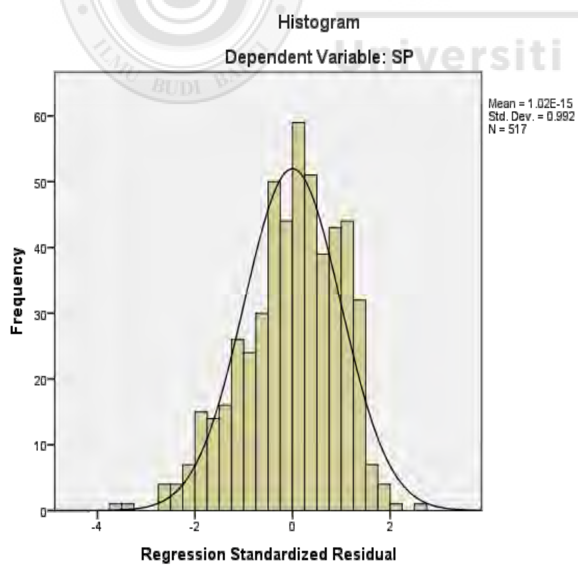
فيما يلي العبارات التي تصف أداء السلامة. يرجى وضع دائرة حول الرقم المناسب على مقياس ليكرت الخماسي والذي يتكون من ١ (لا أوافق بشدة) ٢ (غير موافق) ٣ (محايد) ٤ (موافق) ٥ (موافق بشدة).

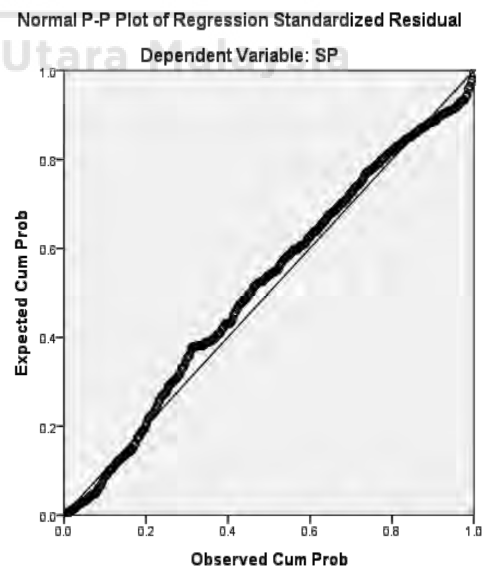
	الاسئلة	لا اوافق بشدة				اوافق بشدة
١	أقوم بعملي بطريقة آمنة.	١	٢	٣	٤	٥
٢	أستخدم كل معدات السلامة اللازمة لأقوم بعملي.	١	٢	٣	٤	٥
٣	استخدم إجراءات السلامة الصحيحة لتنفيذ عملي.	١	٢	٣	٤	٥
٤	أضمن أعلى مستويات السلامة عندما أقوم بعملي.	١	٢	٣	٤	٥
٥	اقوم بتعزيز برنامج السلامة داخل المستشفى.	١	٢	٣	٤	٥
٦	ابذل ما بوسعي من جهد لتحسين سلامة مكان العمل.	١	٢	٣	٤	٥
٧	أساعد زملائي في العمل عندما يعملون في ظروف خطرة أو غير آمنة.	١	٢	٣	٤	٥
٨	اتطوع بالمهام أو الأنشطة التي تساعد على تحسين السلامة في مكان العمل.	١	٢	٣	٤	٥
٩	أتجاهل لوائح السلامة لإنجاز المهمة.	١	٢	٣	٤	٥
١٠	أنا أخرق قواعد العمل في مكان العمل.	١	٢	٣	٤	٥
١١	أنا أغتنم الفرصة لإنجاز المهمة.	١	٢	٣	٤	٥
١٢	أنا اتجاوز قواعد السلامة لتحقيق الهدف.	١	٢	٣	٤	٥
١٣	أنجز المهمة بشكل أفضل عندما تجاهل بعض قواعد السلامة	١	٢	٣	٤	٥
١٤	تمنعني الظروف في مكان عملي من العمل وفقًا لقواعد السلامة.	١	٢	٣	٤	٥
١٥	أتجاوز بعض قواعد السلامة التي تنطوي على مخاطر ضئيلة أو معدومة.	١	٢	٣	٤	٥
١٦	أخرق قواعد السلامة بسبب ضغوطات إدارة المستشفى .	١	٢	٣	٤	٥
١٧	أنا مجبر من قبل زملائي في العمل لكسر القواعد.	١	٢	٣	[illegible]	[illegible]

APPENDIX K
Histograms and Normal Probability Plots for Test of Normality









APPENDIX K- Continue